LAKEWOOD INSTRUMENTS™
MODEL 1575

WATER TREATMENT SYSTEM CONDUCTIVITY CONTROLLER

INSTALLATION & OPERATION MANUAL

SERIAL #: _____



OSMONICS

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IMPORTANT NOTICE

CAUTION: CHEMICAL FEED

All electromechanical devices are subject to failure from a variety of causes. These include mechanical stress, component degradation, electromagnetic fields, mishandling, improper setup, physical abuse, chemical abuse, improper installation, improper power feeds, and exposure.

While every precaution is taken to insure proper functioning, extra precautions should be taken to limit the ability of over-feeding by limiting chemical quantities available, secondary shut-downs, alarms, and redundancy or other available methods.

CAUTION: POWER SOURCE AND WIRING

Low voltage wiring and high voltage (110 plus) should not be run in the same conduit. Always run separately. Even shielded low voltage is not a guarantee of isolation.

Every precaution should be taken to insure proper grounding and elimination of shorting or Electromagnetic field (EMF) interference.

CAUTION: ELECTRICAL SHOCK

To reduce the risk of electrical shock, this equipment has a grounding-type plug that has a third (grounding) pin. This plug will only fit into a grounding-type outlet. If the plug does not fit into the outlet, contact a qualified electrician to install the proper outlet. ***DO NOT*** change the plug in any way.

OSMONICS

We thank you for your selection and purchase of an Osmonics product.

With proper care and maintenance, this device should give you many years of trouble-free service. Please take the time to read and understand this Installation and Operation Manual, paying special attention to the sections on **OPERATION** and **MAINTENANCE**.

If, in the future, any parts or repairs are required, we strongly recommend that only original replacement parts be used. Our Customer Service Department is happy to assist you with your parts or service requests.

☎ **OSMONICS Customer Service and Technical Support Departments can be reached by calling (800) 228-0839 or faxing (262) 238-4402, Monday through Friday, 7:30 a.m. - 4:30 p.m. CST.**

Mail should be sent to:

OSMONICS
Milwaukee Operations
5730 North Glen Park Road
Milwaukee, WI 53209-4454 USA

MODEL 1575

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INTRODUCTION

The Model 1575 is the all-in-one water treatment conductivity controller for cooling towers, chill loops, boilers, and condensate systems. The unit provides for conductivity tracking as well as flow monitoring. The system allows for alarm set points and can do a system shutdown when safety set points are exceeded. Refer to the Table of Contents to find more information about alarm and display features.

The Model 1575 uses the latest in microprocessor capability, giving the user a high level of application flexibility. A large illuminated graphics screen, multiple inputs, and very easy setup characterize this new technology. Water meters and sensors are purchased separately.

Security features allow you to select full access to programming features or to restrict it to VIEW ONLY. An operator password can help ensure that only authorized personnel will operate the system. A password system can be established which requires password entry in order to make system changes or do anything more than just read the controller readout.

The Model 1575 is user-friendly with a graphical screen and numeric keypad, accesses multiple inputs and sets up easily. It's a combination of reliability, accuracy, security and simplicity.

INTRODUCTION

Features, Benefits, Specifications

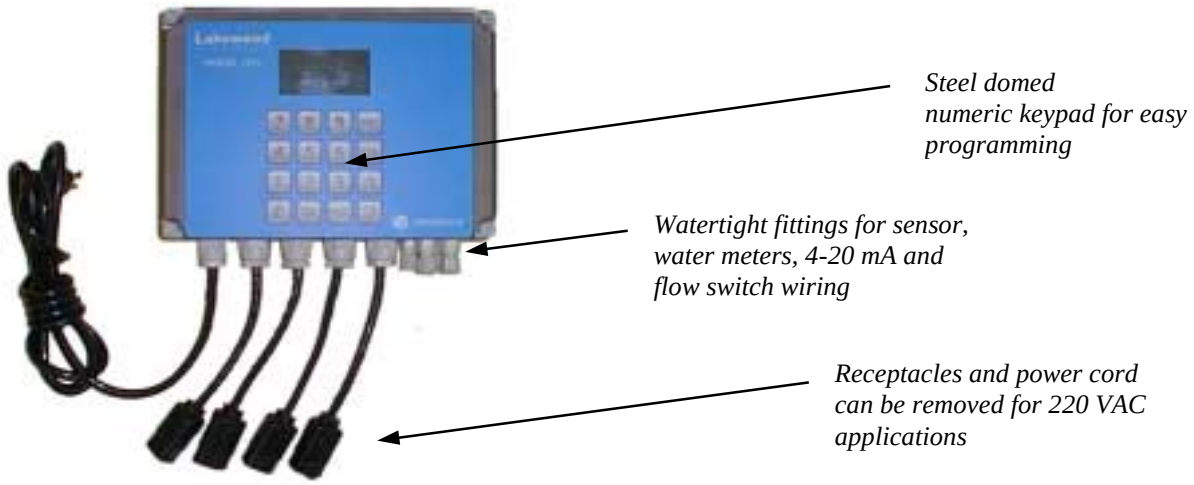


Figure 1: *Model 1575*

FEATURES

- Use this Controller for Cooling towers, Chill loops, Boilers, and Condensate systems
- Removable power cord and receptacles for conduit installations.
- Scheduled feed, which can use three relays for biocides or other chemicals.
- Two (2) water meter inputs, two drum switches, conductivity input, flow switch input, and 4-20 mA output are all standard features.
- Designed with a single circuit board for better reliability and lower cost.
- Large open shallow enclosure for easy wiring.
- Ball valve delay feature allows accurate control of motorized ball valves.
- Heavy-duty stainless steel domed numeric keypad and illuminated graphical display allow for quick and easy programming. Steel domed switches improve the tactile sensing and life expectancy of the keypad.

BENEFITS

- Easy to program, the Model 1575 Controller programs just like the Lakewood 2000 Series controllers.
- Controller can be removed from a cooling tower and be placed in another type of application when used with the appropriate conductivity sensor.
- No add-on options. 4-20 mA output and biocide features are standard.

Specifications

Conductivity range	0-100 µS or 0-10,000 µS for Cooling Towers; 0-100 µS or 0-8000 µS for Boilers	**Drum Switch Inputs**	2 digital contact inputs
Conductivity sensor	2 electrode	**Water meter inputs (2)**	Contact head, electronic pulse, paddle wheel or turbine
Conductivity Resolution	± 10 µS	**Timer**	Max. blowdown time exceeded
Temperature comp.	Automatic (except boiler sensors)	**Output Signal**	One 4 – 20 mA, non-isolated powered output for conductivity
Accuracy & repeatability	± 1.0%	**Output relays**	3 selectable use, 1 blowdown
Deadband/Setpoint	Adjustable	**Relay ratings**	3A each, 10A total
Auto/Manual outputs	Menu selectable	**Power**	(Std) 120 VAC 50/60 Hz (-WP) 120/240 VAC 50/60 Hz
Keypad	16 tactile push-buttons	**Ambient**	32° - 120°F (0 - 49°C)
Display	illuminated 128x64 pixel LCD		

Sensors/Plumbing	**Cooling Tower**	**Boiler**	**Condensate**
Max Pressure (at 100°F)	140 psi (9.65 bar)	600 psi (41.3 bar)	70 psi (4.8 bar)
Max Temp	140°F (60°C)	486°F (252°C)	392°F (200°C)
Min flow	1 gpm (3.785 Lpm)	Varies w/orifice plate	1 gpm (3.785 Lpm)

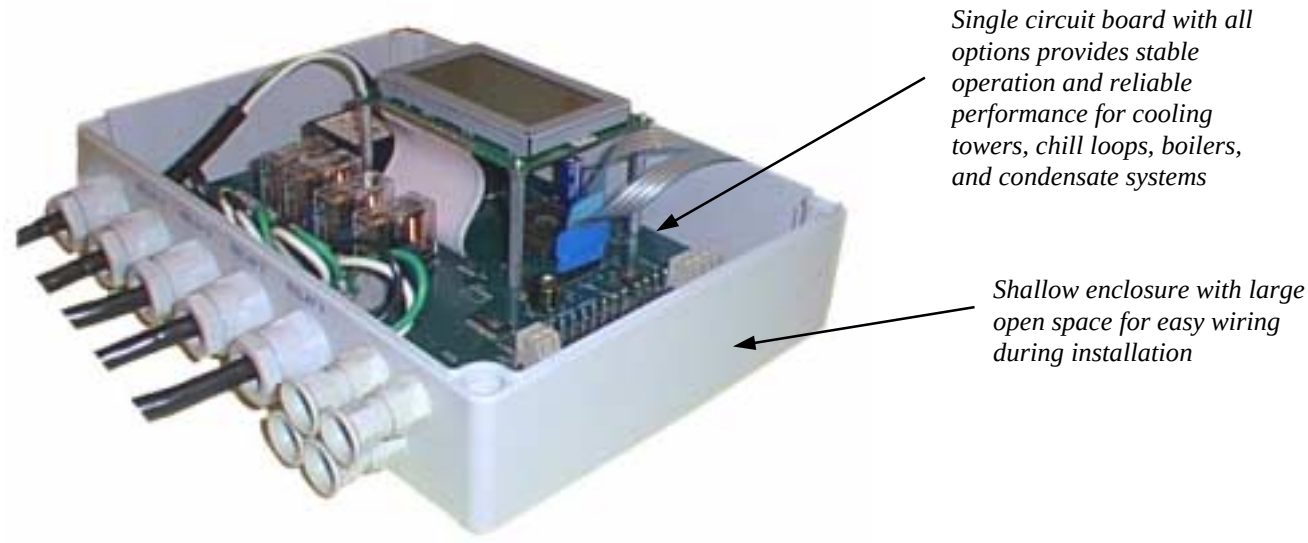


***Figure 2: Model** 1575 Enclosure*

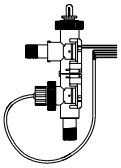
INTRODUCTION

Ordering Information

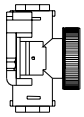
CONTROLLER OPTIONS

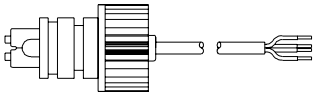
1575 Water Treatment Controller. Universal controller is field programmable for cooling towers, boilers, and condensate applications.

COOLING TOWER OPTIONS



Cooling Tower Flow Switch Plumbing w/ Sensor

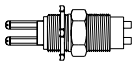




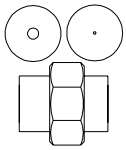
Cooling Tower Sensor Tee and Conductivity sensor

1167158 Cooling Tower Sensor with 20 ft of cable
1169440 Plumbing Tee
1167215 Flow Switch Plumbing.

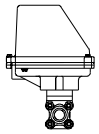
BOILER SYSTEM OPTIONS



SR2



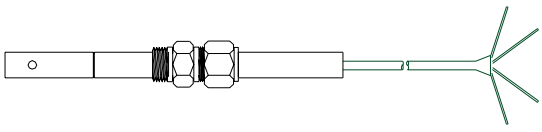
ORIFICE UNION



MBV1

1168374 SR2 Boiler water sensor with 20 ft cable and elbow. ¾ in NPT connection.
1166355 Orifice Plate, ½ NPT, $^{1}/_{16}$.
1166356 Orifice Plate, ½ NPT, ¼.
1166354 Orifice Plate, ½ NPT, $^{1}/_{8}$.
1167972 Orifice Plate, ½ NPT, $^{3}/_{8}$.
1167244 Orifice Union, ½ NPT.
1166686 MBV1 ½ in NPT Motorized ball valve.
1166687 MBV2 ¾ in NPT Motorized ball valve.

CONDENSATE OPTIONS

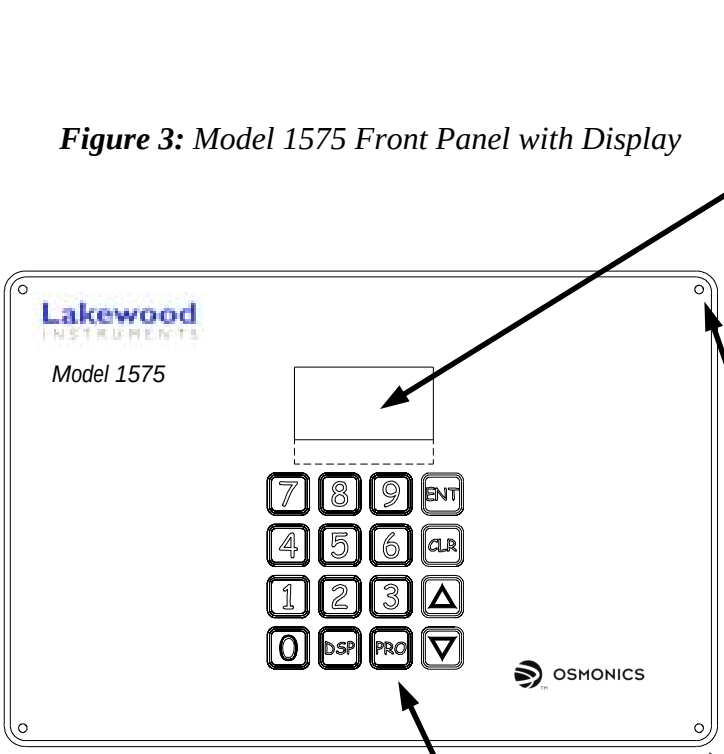


540K.1-4-10I-10-TC500

1104591	540K.1-4-10I-10-TC500	Condensate sensor with ¾ in NPT inline fitting. 0-100 µS.
1168617	540K.1-4-10R-18-TC500	Condensate sensor with 1.0 in NPT retractable inline fitting. 0-100 µS.
1104592	540K.01-4-10I-10-TC500	Condensate sensor with ¾ in NPT inline fitting. 0-10 µS.
1169642	540K.01-4-10R-18-TC500	Condensate sensor with 1.0 NPT retractable inline fitting. 0-10 µS.

LCD
A large, 128x64-pixel graphic display makes it easy to read the menu-driven program.

Figure 3: *Model 1575 Front Panel with Display*



ENCLOSURE
A sturdy enclosure protects your controller. Make sure it is either properly panel mounted or mounted on a flat, non-vibrating wall.

16-BUTTON KEYPAD
ENT = for Menu selection and/or acceptance of selected values.
CLR = to exit a Menu selection and/or skip input options.
PRO = to program a Menu selection.
DSP = Not used.

LOCK BOLTS
Lock bolts keep your circuit boards secure and provide easy access for wiring and setup. Simply remove the four lock bolts and lift open the front panel.

INSTALLATION

Checking

Inspect the shipping carton for obvious external damage. Note on the carrier's bill-of-lading the extent of the damage, if any, and ***notify the carrier***. Save the shipping carton until your Model 1575 controller is started up.

☎ **If shipping damage has occurred, call the OSMONICS Lakewood Instruments Customer Service Department at (800) 228-0839 and return the controller to the factory in the original carton.**

Mounting

Model 1575 Controllers are typically panel-mounted, but they can be mounted on a FLAT, NON-VIBRATING wall. Refer to the WIRING section of this manual for detailed instructions on making electrical connections. Use the enclosed template to position mounting holes.

Conductivity Sensor

The Model 1575 requires the use of the Lakewood Instruments 2-electrode conductivity sensors. Identify the correct sensor for your application in **Table #1** below. If you are using Cooling Tower Sensors, set the switches (located on the upper right hand quadrant of the circuit card) to the position appropriate for your chosen sensor range. Refer to drawings in the back of this manual for wiring connections.

Table #1: Sensor Identification per Application

Application	Sensor P/N's	Description	Temp Comp.	SW1	SW2
Cooling Tower	1167157	Sensor with 2 ft of cable	500 NTC	ON	OFF = 0-2500 ON = 0-10,000
Cooling Tower	1167158	Sensor with 20 ft of cable			
Boiler	1168374	Sensor with 20 ft of cable	NONE	OFF	ON
Condensate	1104591	540K.1-4-10I-10-TC500	500 NTC	ON	OFF
Condensate	1168617	540K.1-4-10R-18-TC500			
Condensate	1104592	540K.01-4-10I-10-TC500			
Condensate	1169642	540K.01-4-10R-18-TC500			

Water Meters

The Model 1575 will accept two water meter inputs. These inputs can be configured for Make-Up, Make-Up Second Source, Bleed, or Chill Loop Make-Up. Refer to the water meter manufacturer's manual for plumbing information. Also, refer to the drawing in the back of this manual for wiring information.

Flow Switch

The flow switch input requires a digital contact. Osmonics manufactures flow switch plumbing. Any digital contact rated for 24 VDC and 500 mA can be used, such as a relay driven by the recirculating pump. If a flow switch is not used then a jumper must be installed across the flow switch connections. Refer to the drawings in the back of this manual for illustration of flow switch connection.

Drum Switches

The Model 1575 will accept two drum switch inputs. When the switch contact closes, a visual alarm will flash on the controller display.

Plumbing

Cooling Tower Plumbing

PLUMBING MATERIALS

- Inlet plumbing can be ¾ inch (1.9 cm) PVC, iron or copper pipe.
- Provide at least 1 gpm (3.79 Lpm) to the sensor. A 4 psi (0.3 bar) differential from take-off to injection is sufficient. If flow is marginal, consult your Lakewood Instruments Factory Representative.
- Outlet plumbing can be ¾ inch (1.9 cm) PVC or CPVC. Schedule 80 is recommended for strength and sunlight protection.
- If copper or iron pipe is used for the inlet, install a PVC union to relieve the stress on the plumbing.

SENSOR PLUMBING

The Conductivity sensor may be mounted in any position as long as water is always in contact when measuring process water. When using the plumbing with the Flow Switch, be sure that the dome is in the upright position. Avoid connections in "dead leg" sections of pipe. An air pocket around the electrode tips will cause erroneous readings. The sensor electrodes should be in direct contact with the process flow.

INSTALLATION

- First, plumb the inlet flow to the line before the heat exchanger. This line brings the sample water in past the sensors for conductivity readings, and then pushes the flow switch float up to activate the unit.

NOTE: FOR YOUR CONVENIENCE, INCLUDE A LAKEWOOD INSTRUMENTS MODEL 9102 SAMPLE LINE SHUT-OFF VALVE AND A SAMPLE VALVE SPOUT (AS SHOWN) IN THE INLET FLOW PLUMBING.

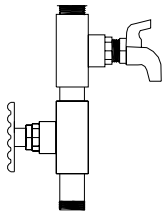


Figure 4:

Model 9102 Valve & Spout

- Then plumb the outlet flow (solution/sample line) to the tower return line or the tower basin, where you can insert your chemical feed system. Refer to drawings in the back of the manual for examples of typical installations.

WARNING: NEVER INJECT CHEMICALS UPSTREAM FROM THE CONTROLLER FLOW CELLS!

☎ **If you have questions or need assistance, call OSMONICS Lakewood Instruments Technical Service Department at (800) 228-0839, Monday-Friday, 7:30 a.m. - 4:30 p.m. CST.**

CAUTION: SOME CHEMICALS MAY HAVE TO BE INJECTED DIRECTLY INTO THE COOLING SYSTEM WATER LINE AND NOT INTO THE SAMPLE LINE. CONTACT YOUR WATER TREATMENT SPECIALIST FOR SPECIFIC RECOMMENDATIONS.

PREFABRICATED CHEMICAL PUMP AND CONTROLLER ASSEMBLIES

These units follow the same instructions given for the standard Model 1575 controller, listed above.

NOTE: IF THE SOLUTION/SAMPLE LINE IS RETURNED TO THE COOLING TOWER RETURN LINE, USE A CORPORATION STOP (LAKEWOOD INSTRUMENTS MODEL 9160), A SOLUTION LINE INJECTOR (LAKEWOOD INSTRUMENTS MODEL 9006) OR A DISPERSING PIPE (LAKEWOOD INSTRUMENTS MODEL 9175). THIS AIDS CHEMICAL-WATER MIXING AND ENHANCES WATER TREATMENT CONTROL CAPABILITIES.

BLOWDOWN VALVE

If you have a way to measure your blowdown flow rate and pressure range, you can use the chart below to determine the correct valve size. If not, consult your water treatment engineer.

Adjustable flow rate diaphragm valves require at least 10 psi (0.7 bar) differential pressure to close. If your water pressure is marginal, use a supply water pressure actuated diaphragm valve or a valve designed to work with zero differential pressure.

Extremely dirty cooling water will plug diaphragm valves. In such cases, use a motorized ball valve and a globe valve for flow control. A strainer ahead of the valve may be okay, but you must flush it regularly. If your flow lines are above 3 inch (for large systems), use a pneumatically operated butterfly valve.

- Be sure to provide isolation and bypass valves. Refer to drawings in the back of the manual for examples of typical installations. If your blowdown valve ever fails, you need to be able to bypass it in order to service it.

Remember on occasion to purge your "Y" strainer screen to maintain flow velocity.

BLOWDOWN VALVE SIZING CHART

Pressure range		Flow range		Suggested Valve Size	
(psi)	**(bar)**	**(gpm)**	**(Lpm)**	**(inch)**	**(cm)**
10-50	0.7-3.4	1-5	3.8-18.9	¾ inch	1.9 cm
50-150	3.4-10.3	5-10	18.9-37.9	¾ inch	1.9 cm
10-50	0.7-3.4	5-10	18.9-37.9	1 inch	2.5 cm
50-150	3.4-10.3	10-15	37.9-56.8	1 inch	2.5 cm
10-50	0.7-3.4	10-15	37.9-56.8	1½ inch	3.8 cm
50-150	3.4-10.3	15-20	56.8-75.7	1½ inch	3.8 cm
10-50	0.7-3.4	15-20	56.8-75.7	2 inch	5.1 cm
50-150	3.4-10.3	20-30	75.7-113.6	2 inch	5.1 cm
10-50	0.7-3.4	30-100	113.6-378.5	3 inch	7.6 cm
10-50	0.7-3.4	100-300	378.5-1135.5	4 inch	10.2 cm

INSTALLATION

Boiler Plumbing

Refer to the drawings in the back of this manual for installation illustrations.

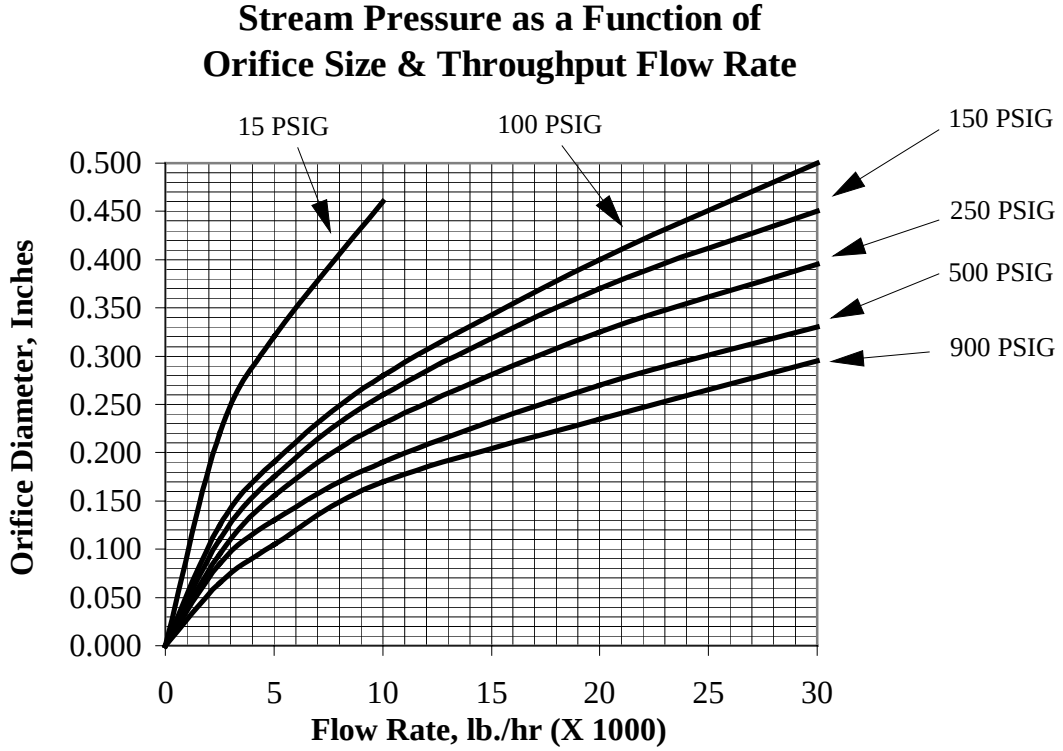
PLUMBING INSTALLATION (*WITHOUT SAMPLE COOLER*)

To prevent steam flashing and damage to the controller refer to the installation drawing in the back of the manual and notes below.

- Use piping from the boiler skimmer line as the sample and blowdown line.

***NOTE*: DO NOT USE THE BOTTOM BLOWDOWN OUTLET AS THE SAMPLE OR AUTOMATIC BLOWDOWN LINE.**

- The controller must be within 20 ft of the sensor.
- If using conduit between the sensor and controller, allow a place for water to escape if the sensor leaks. This will help prevent water damage to the controller.
- The sample/cycle method will use one orifice plate while the continuous method will use two orifice plates. Orifice plates (or globe valve) and sensor must be installed horizontally (as shown in drawings in the back of this manual). They should be located at least two feet below the boiler water level. Review the graph below to determine the precise orifice size necessary to obtain the desired stream pressure downstream of the orifice.
- There should be no restrictions between the skimmer line and the orifice plates (or globe valve).



PLUMBING INSTALLATION (*WITH SAMPLE COOLER*)
You must use a cooling tower sensor downstream of the sample cooler. Refer to the installation drawing in the back of the manual and notes below.

- Use piping from the boiler skimmer line to the sample cooler as the sample line.

***NOTE*: DO NOT USE THE BOTTOM BLOWDOWN OUTLET AS THE SAMPLE LINE.**

- The 1575 must be within 20 ft of the sensor.
- The sample cooler must be installed so that the cooling tower sensor is never exposed to extreme heat.

Condensate Plumbing

Osmonics recommends that the conductivity sensor be mounted per the drawing in the back of this manual. The sensor is mounted vertically to remove any air bubbles, which may otherwise collect around the sensor tip. Avoid connections in "dead leg" sections of pipe. An air pocket around the electrode tips will cause erroneous readings. The sensor electrodes should be in direct contact with the process flow.

Conductivity vs. PPM Table

µS/cm	ppm	µS/cm	ppm	µS/cm	ppm
2	1	120	68	900	560
4	2.1	140	80	950	600
6	3.2	160	91	1000	630
8	4.2	180	100	1575	970
10	5.2	200	115	1575	1300
12	6.4	220	127	2500	1700
14	7.4	240	139	3000	1575
16	8.5	260	150	3400	2400
18	9.6	280	164	4000	2750
20	11.0	300	176	4500	3150
25	13.5	350	210	5000	3500
30	16.0	400	240	5500	3900
35	19.0	450	270	6000	4300
40	22.0	500	300	6500	4700
45	24.5	550	335	7000	5000
50	27.5	600	370	7500	5400
60	33.0	650	400	8000	5800
70	39.0	700	435	8500	6200
80	45.0	750	470	9000	6600
90	51.0	800	500	9500	7000
100	56.0	850	530	10,000	7400

Fuse

The Model 1575 contains a 5 x 20 mm, European-style fuse. Replacement fuses must be 10A, 250V, fast blow type. If this fuse is blown, the display will be blank when the unit is connected to power. Refer to the troubleshooting section of this manual for more information about blank displays.

Wiring

Standard Model 1575 Controller with Power Cord and Outlets

The Model 1575 standard units come with a power cord and female molded receptacles for your blowdown valve and chemical pumps. Follow the wiring procedure in the order stated below:

CAUTION: MAKE SURE THE POWER CORD IS UNPLUGGED WHILE YOU ARE WORKING WITH THE WIRING!

1. Plug the blowdown solenoid valve into the outlet marked **RELAY 1** (BLOWDOWN). If using a Motorized Ball valve, or a conduit installation is required, do the following:
    - Remove the front panel assembly by removing the four screws, one in each corner. Be careful when removing the panel, a ribbon cable will be attached between the front panel and the printed circuit board inside.
    - Remove the receptacle labeled **RELAY 1**.
    - Wire the blowdown valve through conduit to the ½ inch conduit knockout provided on the bottom of the enclosure. If you need to maintain NEMA-4X rating, you will need to provide NEMA-4X compatible conduit components.
    - For solenoid valves, connect the hot blowdown valve wire to the **NO** lug on the **P9** terminal. The ground wire (green) should be wired to the ground lug **EGND** on the **P9** terminal. The neutral (white) wire goes to the **P9** lug **COM** terminal.
    - For Motorized Ball Valves, connect the open blowdown valve wire to the **NO** lug on the **P9** terminal. Connect the close blowdown valve wire to the **NC** lug on the **P9** terminal. The ground wire (green) should be wired to the ground lug **EGND** on the **P9** terminal. The neutral (white) wire goes to the **P9** lug **COM** terminal.
    - Wiring of water meters, 4-20 mA output, and sensors is shown in detail drawings in the back of this manual. Be sure that watertight fittings are secure when done with wiring.

WARNING: NEVER RUN LOW VOLTAGE (DC) WIRING WITH HIGH VOLTAGE (AC) WIRING IN THE SAME CONDUIT. IN ORDER TO ELIMINATE ELECTRICAL NOISE AND INTERFERENCE, SEPARATE THESE WIRES.

    - After you are done, make sure there are no loose connections and verify that all tools and debris are removed. Close the panel. Tighten the front panel screws and continue the wiring process.

2. Plug the chemical pump into **Relays 2, 3, and 4** outlets.
3. Plug the power cord into a convenient 120 VAC outlet.

<u>WARNING</u>: <u>DO NOT</u> PLUG IN CHEMICAL PUMPS THAT ARE LARGER THAN 1/6 HORSEPOWER. THE CONTROL RELAYS ARE INTENDED FOR ELECTRONIC OR SMALL MOTOR-DRIVEN CHEMICAL PUMPS. LARGER PUMPS REQUIRE THE -HR OPTION WITH 25-AMP-RATED INTERPOSING RELAYS. CONTACT OSMONICS FOR SPECIAL INSTRUCTIONS.

Weatherproof Enclosure without Outlets

Instead of having outlets to plug pumps into, the enclosure can accommodate wiring through conduit. Simply remove the bushings provided with the enclosure, and then wire the pumps directly to the terminal blocks as shown in the wiring diagram.

- Remove the front panel assembly by removing the four screws, one in each corner. Be careful when removing the panel, a ribbon cable will be attached between the front panel and the printed circuit board inside.
- Remove the receptacle labeled **RELAY 1**.
- Wire the blowdown valve through conduit to the ½ inch conduit knockout provided on the bottom of the enclosure. If you need to maintain NEMA-4X rating, you will need to provide NEMA-4X compatible conduit components.
- For solenoid valves, connect the hot blowdown valve wire to the **NO** lug on the **P9** terminal. The ground wire (green) should be wired to the ground lug **EGND** on the **P9** terminal. The neutral (white) wire goes to the **P9** lug **COM** terminal.
- For Motorized Ball Valves, connect the open blowdown valve wire to the **NO** lug on the **P9** terminal. Connect the close blowdown valve wire to the **NC** lug on the **P9** terminal. The ground wire (green) should be wired to the ground lug **EGND** on the **P9** terminal. The neutral (white) wire goes to the **P9** lug **COM** terminal.
- Chemical Pumps will be wired to Terminals **P10**, **P11**, and **P12**. Connect the hot wire to the **NO** lug. The ground wire (green) should be wired to the ground lug **EGND**. The neutral (white) wire goes to the **P9** lug **COM**.
- Power to the controller is to be connected at **P1**. The AC hot wire will be connected to **HOT** lug. Neutral is connected to **COM**, and Earth Ground is connected to lug **EGND**. Toggle S1 to operate in the proper voltage (115/230 VAC). If your supply voltage is 230 VAC, bleed valve and chemical pumps must also be rated for 230 VAC operation.
- Wiring of water meters, 4-20 mA output, and sensors is shown in detail drawings in the back of this manual. Be sure that watertight fittings are secure when done with wiring.

<u>WARNING</u>: NEVER RUN LOW VOLTAGE (DC) WIRING WITH HIGH VOLTAGE (AC) WIRING IN THE SAME CONDUIT. IN ORDER TO ELIMINATE ELECTRICAL NOISE AND INTERFERENCE, SEPARATE THESE WIRES.

- After you are done, make sure there are no loose connections and verify that all tools and debris are removed. Close the panel. Tighten the front panel screws and continue the wiring process.

Check the Operation

After installation is completed, follow these instructions:

- Make sure the controller has power and is operating.
  You will notice the controller will display:



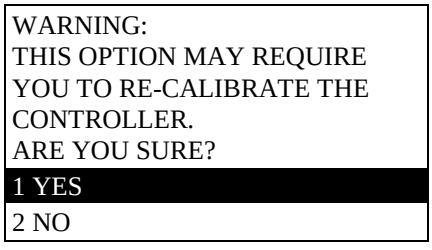
This indicates that power has been applied to the controller and no one has touched the keypad. This will also happen anytime there is a power outage and power has been returned to the controller.

- Press any key on the keypad and you will see the **Process Screen**.
- Press **CLR** once on the keypad and you will see the **Main Menu** on the screen.
- Use the ↑ and ↓ arrow keys to move through the menu.

Reinitialization

It is suggested that you reinitialize the controller before programming in your own numbers and parameters. This will wipe out any random settings that may be in the controller. To do so, follow these instructions:

- After you have practiced moving up and down in the **Main Menu**, press **7** or highlight **SYSTEM SETUP** and press **ENT**.
- Press **2** or highlight **INITIALIZATION** and press **ENT**.
- Press **2** or highlight **WHOLE CONTROLLER** and press **ENT**. A warning will appear on the screen (see below). Press **1** to proceed, **2** to cancel.



SETUP AND CALIBRATION

Testing

Continue to test the controller's accessories by following these instructions:

- Press the **CLR** key twice to get back to the **Main Menu**.
- Press **1** or highlight **PROCESS** and press **ENT**. Use the ↑ or ↓ arrow keys and you will notice the screen will have a top portion that deals with the conductivity value and a lower portion that has four boxes labeled **BLOW**, **RLY 2**, **RLY 3** and **RLY 4**. These relays switch on the alarms and other accessories the controller operates. There may be a dark flashing line separating the two sections; this indicates which alarms are active at the moment. As shown at the bottom of the screen, press **ENT** to access the relays.
- The four relays line up vertically with boxes that are blank when the relay is not in operation. Select a relay by pressing its number. The box will change (probably it will become shaded), indicating that the relay has reversed its status from **OFF** to **ON**. Each time you press the number, the relay reverses its status. Any changes made to the relays will last five minutes before the relays go back on automatic control.
- Finally, press **CLR** twice to return to the **Main Menu**.

Enable/Disable Conductivity

The conductivity feature of the 1575 series controller can be disabled if blowdown by makeup volume is desired. To enable or disable the conductivity follow these instructions:

- From the **Main Menu** press **7** or highlight **System Setup** and press **ENT.**
- Press **1** or highlight **Process Parameters** and press **ENT**.
- Press **4** or highlight **Enable/Disable** and press **ENT**. You will automatically be moved to **Enable Conductivity?.**
- Press **1** for **Yes** or press **2** for **No**.

Water Meters

The 1575 series controllers will work directly with the following types of meters: dry contacting head meters, Seametrics open collector output meters, Signet 2535 and 2540 paddle wheel meters, and the Autotrol 1 inch and 2 inch meters. Contact Osmonics for other types of water meters. Wiring and water meter configurations are covered later in this manual.

Memory of Setpoints and Calibration Values

The Model 1575 controller stores all setpoints, calibration values, and relay configurations in an EEPROM. An EEPROM does not require a battery to retain information, so if power is lost these values will be retained for years. The 1575 does include a capacitive backup device to retain information such as the water meter totals, clock and calendar information. The capacitive backup device will never need to be replaced and will hold data approximately 1 day after each power failure.

Calibration

Cooling Tower, Chill loop, and Condensate

It is necessary to have an accurate reading of the tower water conductivity to properly calibrate the controller. A hand-held conductivity meter works well for this purpose. Once you have obtained a reading, immediately enter the value into the controller. In the process screen press **PRO**, then use the number keys to enter the value, then press **ENT**. When the number is accepted, you will see the **CALIBRATION COMPLETE** screen before the LCD display switches back to the original **PROCESS** screen. Then take a second sample with a hand-held conductivity meter and confirm the reading on the display.

Boiler, continuous sample method (*WITHOUT sample cooler*)

- Allow boiler water to flow past the probe for a minute or so, or, until display reading stabilizes.
- Take a hot sample of the boiler water, measure with portable (hand-held) conductivity meter, and immediately calibrate the controller. It is acceptable to use a **TDS** meter instead of conductivity. Just convert TDS to µS using the "Conductivity vs. PPM Table" on page 16.
- Return to the process menu. Press **PRO**, then adjust the controller to read the value of the **UN-NEUTRALIZED** sample. Press **ENT** to calibrate the controller.
- Take a second sample and verify calibration.

SETUP AND CALIBRATION

Boiler, sample/cycle method (*WITHOUT sample cooler*)

- With the boiler and controller on-line and operating property, press **ENT** while viewing the process menu, turn on Relay 1 (BLOW). If in a sample or blowdown mode the relay will already be on.
- Allow boiler water to flow past the probe for a minute or so, or, until display reading stabilizes.
- Take a hot sample of the boiler water, measure with portable (hand-held) conductivity meter, and immediately calibrate the controller. It is acceptable to use a TDS meter instead of conductivity. Just convert TDS to µS using the "Conductivity vs. PPM Table" on page 16.
- Return to the process menu. Press **PRO**, then adjust the controller to read the value of the **UN-NEUTRALIZED** sample. Press **ENT** to calibrate the controller.
- Take a second sample and verify calibration.
- Return Relay 1 to the off position if you turned it on in step 1.

ALARM, High/Low

These alarms will be displayed on the controller process screen for reference only. However, the High Conductivity alarm will cause the bleed relay to open. This provides conductivity protection during feed schedule lockouts, and the "FEED SEQUENCE ACTIVE" message will be displayed. Because of this feature, it is important that the High Conductivity alarm is higher than the conductivity setpoint.

Blow Relay

Blowdown can be configured based on setpoint or based on volume.

BLOWDOWN SETPOINT

After you have tested the controller's accessories, you need to establish the controller's setpoint for operation. Check with your water treatment engineer to determine what conductivity setpoint your system needs.

Follow these instructions to establish the controller's setpoint:

- From the **Main Menu**, press **2** or highlight **RELAYS** and press **ENT**.
- Press **1** or highlight **BLOW** and press **ENT**.
- Press **1** or highlight **BASED ON SETPOINT** and press **ENT**.
- Press **1** or highlight **SETPOINT VALUES** and press **ENT.**
- Simply use the keypad numbers to enter the proper conductivity setpoint and press **ENT**. When finished, you will automatically be moved down to the deadband setpoint.

DEADBAND

After the setpoint is established, the controller's deadband must also be set. "Deadband" refers to the amount of conductivity above and below the setpoint—a range within which the controller will not react. Due to continuous fluctuations in the conductivity level, it is necessary to have this deadband range or stable readings will be difficult to obtain. The Deadband should be a small percentage of the setpoint. Half the deadband amount will be automatically put above the setpoint, and the other half below it.

- For example, a conductivity setpoint of 1,000 µS with a deadband of 100 µS would result in the BLOW relay opening at 1,050 µS and closing at 950 µS.

- Use the keypad numbers to enter the proper deadband setpoint and press **ENT**. When finished, you will automatically be switched to the blowdown timeout screen.

The blowdown timeout function is strictly a visual alarm feature displayed on the 1575 series controller–it will not close the blowdown valve. If you want to disable this function, simply program 0 hours, 0 minutes.

WHEN TO BLOWDOWN

Most applications for cooling towers and boilers will blowdown *above* the setpoint. There are some chill loop systems, however, where a reverse setpoint method is preferred. That is, blowdown occurs *below* the setpoint. In these applications the user will apply a chemical pump to the bleed outlet and feed inhibitor chemical to raise the conductivity of a chiller loop. If using this method be sure that the high conductivity alarm is set as high as possible.

BOILER TIMERS

For cooling tower and continuous boiler applications, these timers must remain at zero. In boiler applications where the sample/cycle method is used, times will be entered. A typical sample time is 2 minutes with a cycle time of 1 hour. Osmonics recommends that you consult your water treatment professional for more information on using these settings.

BALL VALVE DELAY

Motorized ball valves require a few seconds to open and close. If the valve is commanded to close before it completes the process of opening, it may enter a state where it is half-open. The ball valve delay feature prevents this from occurring. To use this feature, determine how many seconds it takes to open and close the valve. Use the longest time and round up 1 second. Use this value as your Ball valve delay time. This delay time will also be observed when manually opening valves.

Recommended Delay Times

Valve	Delay Time
Solenoid	0 Seconds
Worchester Actuator	8 Seconds

BLOWDOWN BASED ON VOLUME

For some applications you may want to blow down based on volume from a water meter. You can blow down based on one or both water meter inputs.

Follow these instructions to set up the controller to blow down based on volume:

- From the **Main Menu**, press **2** or highlight **RELAYS** and press **ENT**.
- Press **1** or highlight **BLOW** and press **ENT**.
- Press **2** or highlight **BASED ON VOLUME** and press **ENT.**
- Press **1** or highlight **BLOWDOWN VOLUME** and press **ENT**.
- Select the water meter you want to base blowdown on by pressing **1** for **MTR1**, pressing **2** for **MTR2**, or pressing **3** for the sum of **BOTH** water meters.
- Simply use the keypad numbers to enter the proper water volume and press **ENT**. When finished, you will automatically be moved down to the amount of time to blow down in minutes and seconds.

RELAY 2, 3, and 4, Water Meters

You may configure **RELAY 2, 3,** or **4** to be activated by any one of the water meter inputs, or, the sum of both water meter inputs after a user defined volume of water.

RELAY 2, 3, and 4, Percent Blowdown

You may configure **RELAY 2, 3,** or **4** to be activated by percent of bleed time. If 50% is entered and bleed time is 10 minutes, the relay will be energized for 5 minutes. The relay will activate after the bleed shuts off.

RELAY 2, 3, and 4, Percent of Time

The Percent of Time feature allows you to feed chemical strictly based by a percent of time. This relay control scheme works in patterns of 20-second time blocks. A relay is on for some multiple of 20 seconds and off for some multiple of 20 seconds. Below is a chart showing how Percent of Time works over a 400 second example.

x = 20 seconds on
- = 20 seconds off

	←==========400 seconds==========→
0%	- - - - - - - - - - - - - - - - - - - -
5%	x - - - - - - - - - - - - - - - - - - -
10%	x - - - - - - - - - x - - - - - - - - -
20%	x - - - - x - - - - x - - - - x - - - -
30%	x - - x - - x - - - x - - x - - x - - -
40%	x - x - - x - x - - x - x - - x - x - -
50%	x - x - x - x - x - x - x - x - x - x -
60%	x - x x - x - x x - x - x x - x - x x -
70%	x x - x x - x x x - x x - x x - x x x -
80%	x x x x - x x x x - x x x x - x x x x -
90%	x x x x x x x x x - x x x x x x x x x -
95%	x x x x x x x x x x x x x x x x x x x -
100%	x x x x x x x x x x x x x x x x x x x x

The patterns for odd values such as 37% or 52% cannot be shown in a 400-second time interval but they would look very much like those patterns shown for 40% and 50% respectively. In an extreme case such as 99%, the relay would be on for 99 20-second blocks (1980 seconds) and then off for 1 20-second block (20 seconds) and then on for 1980 seconds and off for 20 seconds etc.

To determine the total amount of chemical fed over a 24 hour period, multiply the percent of time by the number of hours a day that your controller is operating, then multiply by your chemical pump flow rate per hour.

For example:

We select 10% of the time, our controller operates 24 hours a day and our chemical pump flow rate is 1 gallon per hour.

$$10\% \times \frac{24 \text{ hours}}{\text{Day}} \times \frac{1 \text{gallon}}{\text{Hour}} = \frac{2.4 \text{ Gallons}}{\text{Day}}$$

RELAY 2, 3, and 4, Feed Schedule Feature

The Feed Schedule feature of this controller is intended for programming the feeding of chemicals such as biocides. You may schedule chemicals to feed by weekday or cycle day, e.g., every Monday or every 3rd day out of 14. In addition you may or may not want **RELAY BLOW, 2, 3,** or **4** to be locked out by the feed schedule timer. Below is an example screen for programming chemicals. Before programming a chemical, you need to configure Relay 2, 3, or 4 to be a feed schedule relay.

CHEM (ARROWS): NONE
CYCLE DAY: 0
START TIME: 00:00
COND SETPOINT: 0
BLOW DURATION: 00:00
FEED DURATION: 00:00
LOCKOUT TIME: 00:00
<UP><DOWN>ENT: ACCEPT

CHEM	is which relay you want to program (you must configure a relay to be a feed schedule relay first).
CYCLE DAY or **DAY**	is the day you wish to actuate the feed schedule relay.
START TIME	is the time you want to start the feed schedule program.
COND SETPOINT	is a pre-bleed setpoint. This would typically be lower than the normal conductivity setpoint. Because the bleed valve may be disabled during a scheduled feed, a pre-bleed will help prevent a build up of tower conductivity. 0 µS will disable this feature. **This feature has no effect when conductivity is disabled**.
BLOW DURATION	if the COND SETPOINT is not met within this time, the feed schedule relay will be actuated. **If conductivity is disabled, this is the amount of time the controller will blow down during the pre-bleed sequence.** Inputting 0:00 will disable this feature. Osmonics recommends that some time be entered if pre-bleed is used.
FEED DURATION	is the amount of time the feed schedule relay will be on.
LOCKOUT TIME	after the feed schedule relay is done, a lockout time for **RELAY BLOW, 2, 3,** or **4** can be achieved. 0:00 will disable this feature.

Programming of scheduled feeds is also covered later in this manual.

<u>NOTE</u>: A "HIGH CONDUCTIVITY ALARM" WILL OVERRIDE THE BLEED VALVE LOCKOUT WHILE THE SCHEDULED FEED MODE IS ACTIVE.

SETUP AND CALIBRATION

Security Levels

This section of the manual provides a comprehensive overview of the entire menu as it can be viewed from each security level. In order to lead off with a complete look at the menu, the levels will be shown in the following order: **Technician** and **View Only**. Once you review the instructions in this section and learn the menu options, you will be able to perform your own setup and calibration using these examples to guide you through the process.

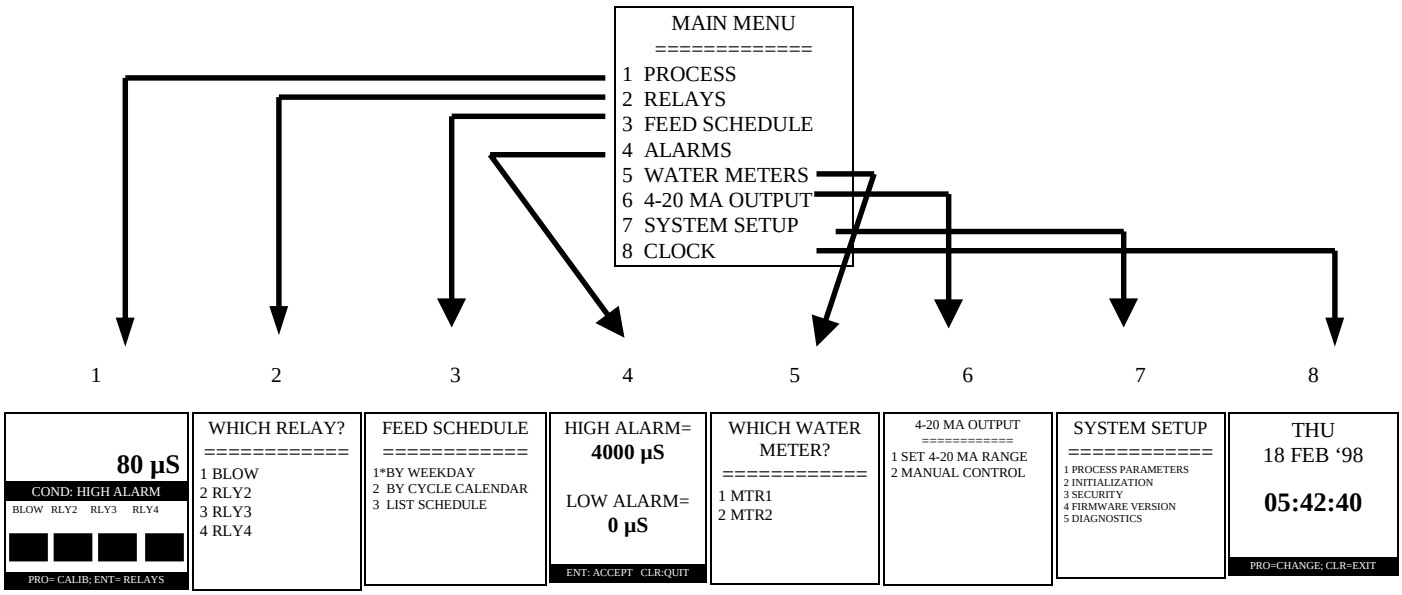
The Model 1575 offers two (2) optional security levels: **View Only** and **Technician**. A password is required to change from one security level to another. The **Technician** level has its own factory-preset password (2222), but your water treatment engineer can also designate personalized passwords from the **Technician Level Menu**.

NOTE: IF YOU USE PERSONALIZED PASSWORDS, MAKE SURE THEY ARE RECORDED IN A SAFE AND SECURE PLACE.

TECHNICIAN LEVEL MENU

The complete **Main Menu** has 8 available options that can be accessed in the **Technician Level**. However, a list of only six options can be viewed at one time. Use the ↑ and ↓ keys to scroll through the options.

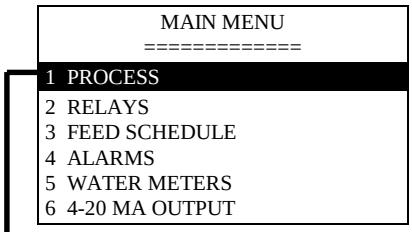
The **Technician Level** allows you to review the entire **Main Menu**. As an introduction, here is a graphic overview of the first level of each option in the **Main Menu** to see how it operates. Complete detail of each option is provided on the following pages.



*Press **CLR** to return to a previous screen. Repeated use of **CLR** allows you to return all the way back to the **Main Menu** from anywhere in the program.*

TECHNICIAN LEVEL MENU

PROCESS

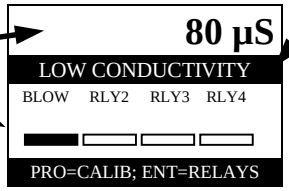


Press **1** or **ENT** to view **PROCESS**.

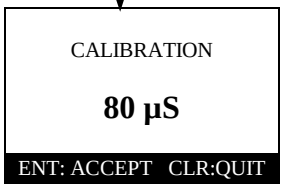
Current reading of sample water conductivity level.

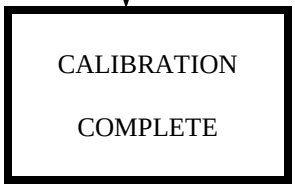
You can view both the sample reading and different status lines from this screen. Use the ↑ and ↓ keys to toggle through the following status screens:

- **a) Relay status**
- **b) Blowdown Setpoint**
- **c) Relay Settings**
- **d) Meter 1 & 2 Flow Totals**
- **e) Date & Time**



Press **PRO** to calibrate your Model 1575.





The alarm status line, a darkened area, scrolls through all currently active alarms:

- **a) High Conductivity**
- **b) Low Conductivity**
- **c) No Flow**
- **d) Drum Switch #1**
- **e) Drum Switch #2**
- **f) Opened TC**
- **g) Closed TC**
- **h) Blowdown Timeout**

If no alarms are active, nothing will be displayed here.

<u>NOTE</u>: THE CONTROLLER MEASURES ONLY UN-NEUTRALIZED CONDUCTIVITY.

The message "**FEED SEQUENCE ACTIVE**" means a SCHEDULED FEED program is in progress. This alarm is not highlighted like the alarms listed above.

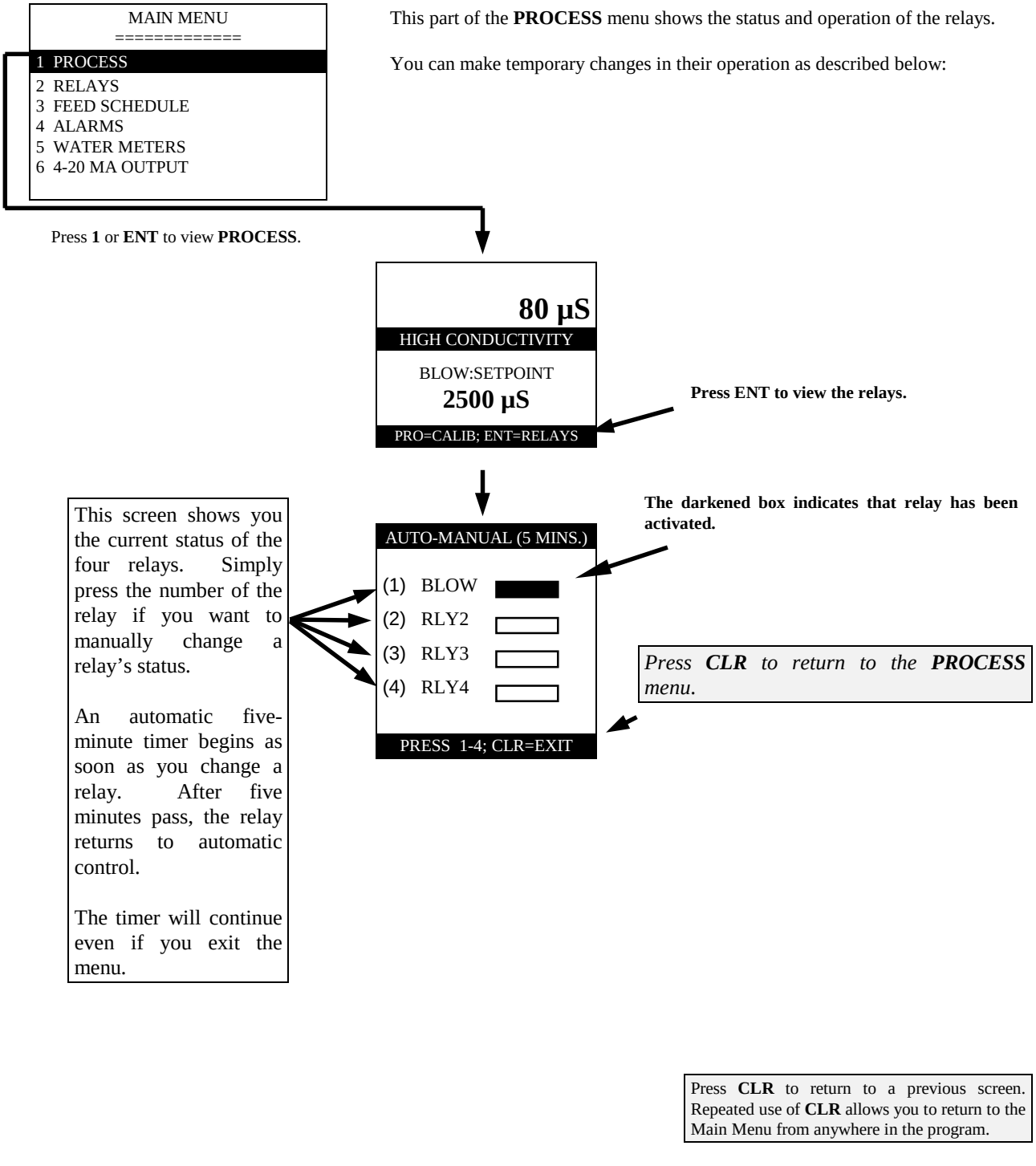
CALIBRATING CONDUCTIVITY

It is necessary to have an accurate reading of the blowdown water to properly calibrate the controller. A hand-held conductivity meter that tests the sample works well for this purpose.

Once you have attained a reading, immediately enter the value into the controller. Use the number keys to enter the value, then press **ENT**. When the number is accepted, you will see the **CALIBRATION COMPLETE** screen before the LCD display switches back to the original **PROCESS** screen, as shown at right. Then take a second sample with a hand-held conductivity meter and confirm the reading on the display.

Press **CLR** to return to a previous screen. Repeated use of **CLR** allows you to return to the Main Menu from anywhere in the program.

PROCESS
Relays



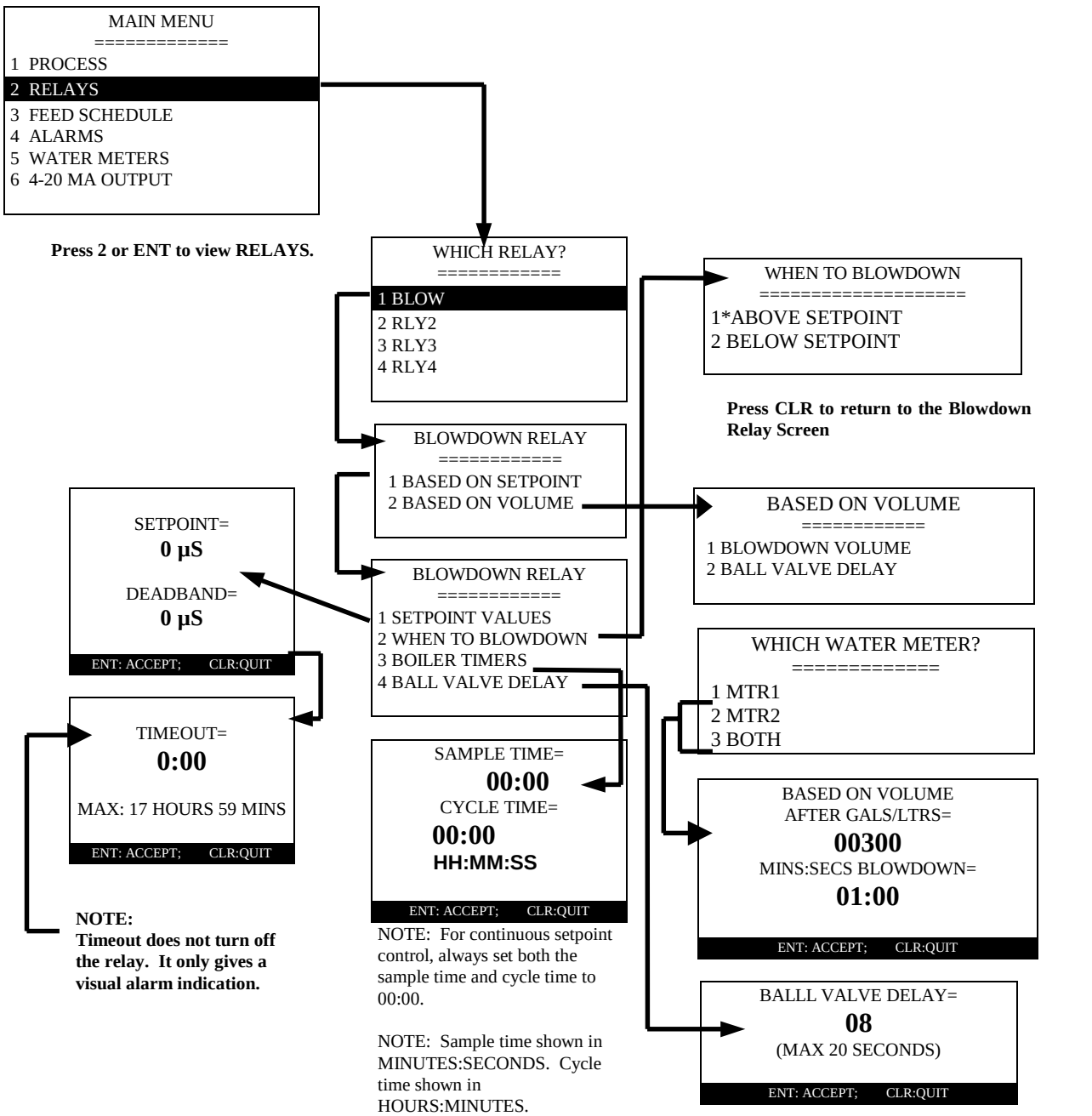
This part of the **PROCESS** menu shows the status and operation of the relays.

You can make temporary changes in their operation as described below:

Press **CLR** to return to a previous screen. Repeated use of **CLR** allows you to return to the Main Menu from anywhere in the program.

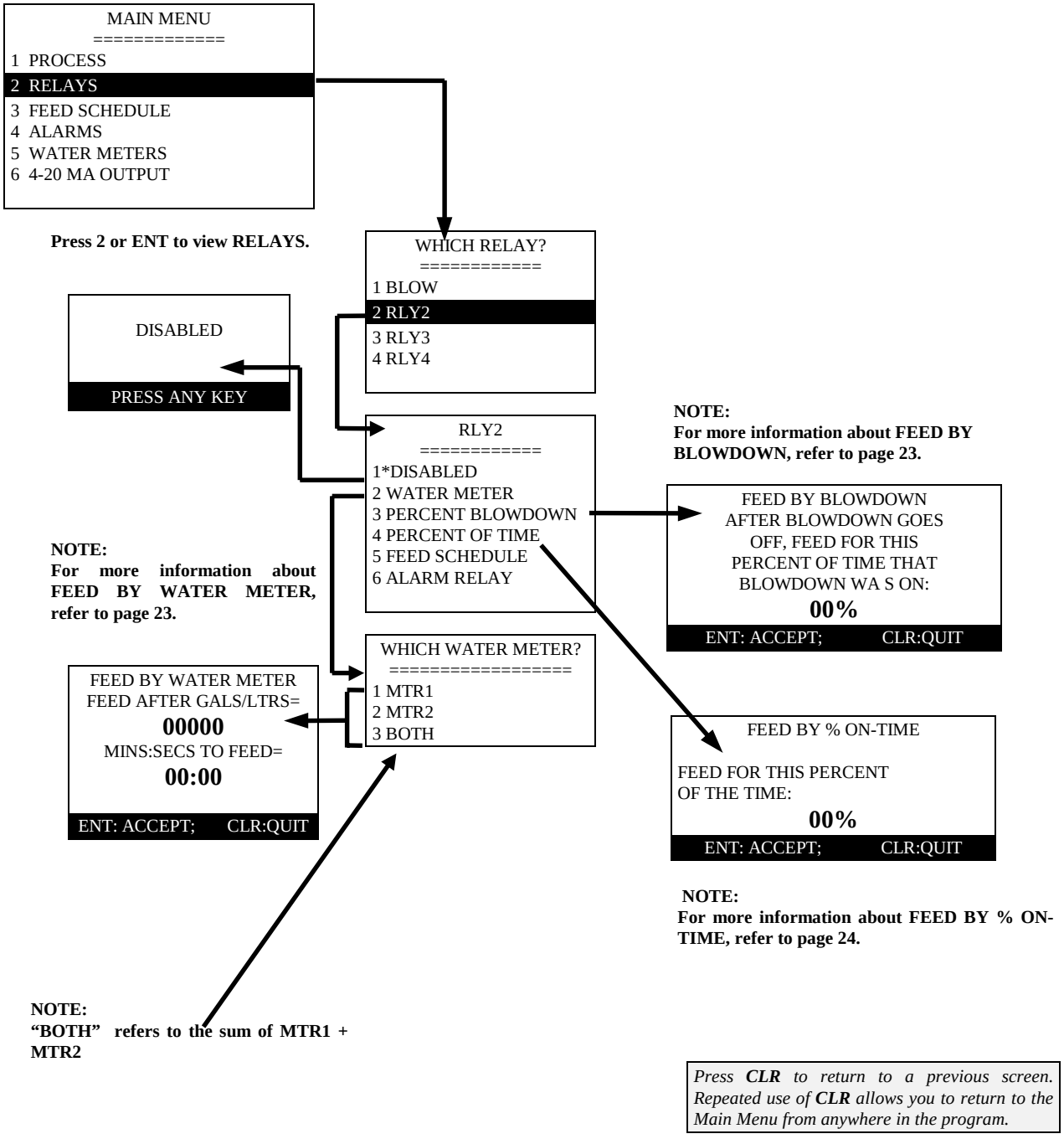
TECHNICIAN LEVEL MENU

RELAYS
Rly 1 (Blow)



*Press **CLR** to return to a previous screen. Repeated use of **CLR** allows you to return to the Main Menu from anywhere in the program.*

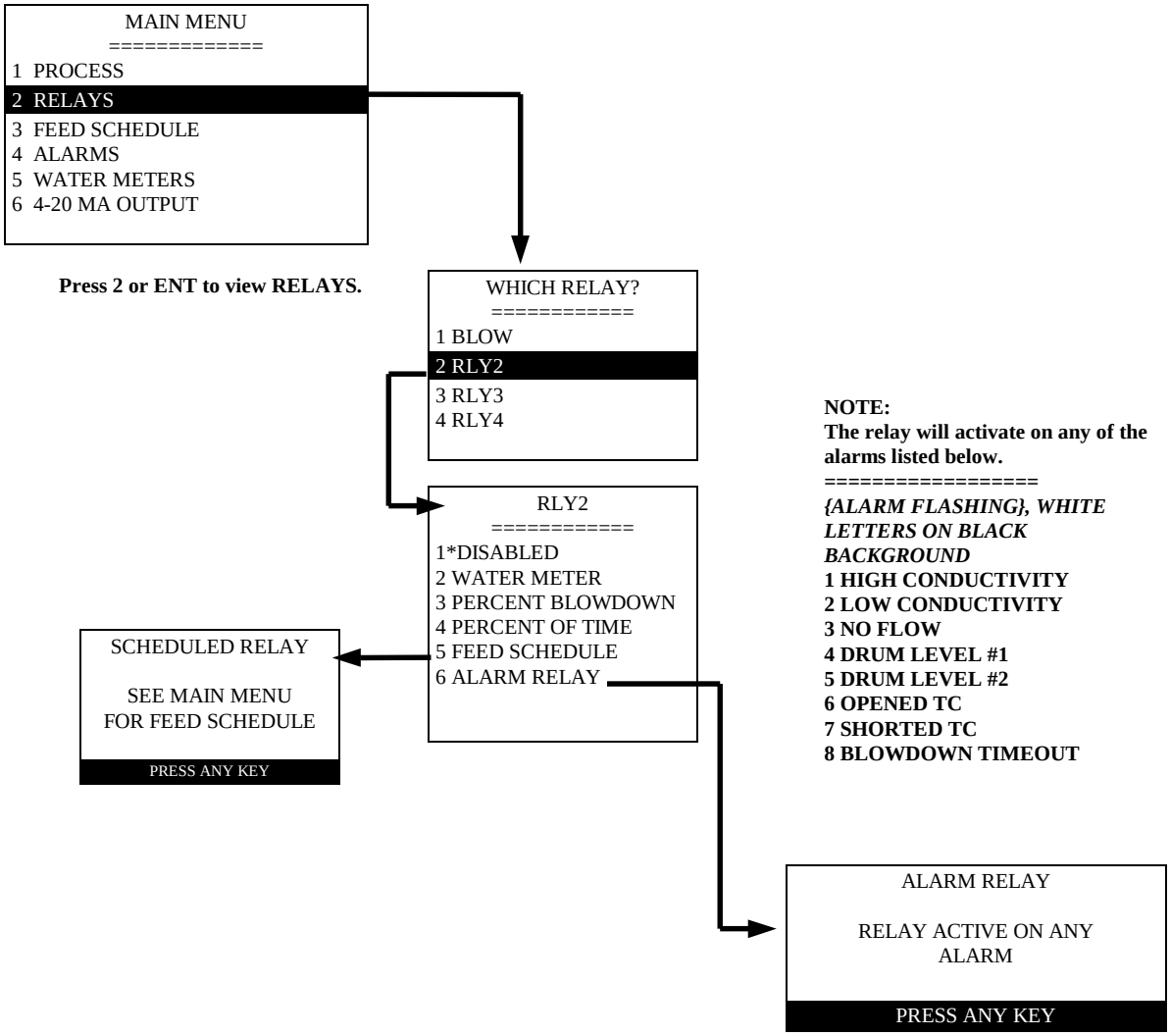
RELAYS
Rly 2, 3, 4



*Press **CLR** to return to a previous screen. Repeated use of **CLR** allows you to return to the Main Menu from anywhere in the program.*

TECHNICIAN LEVEL MENU

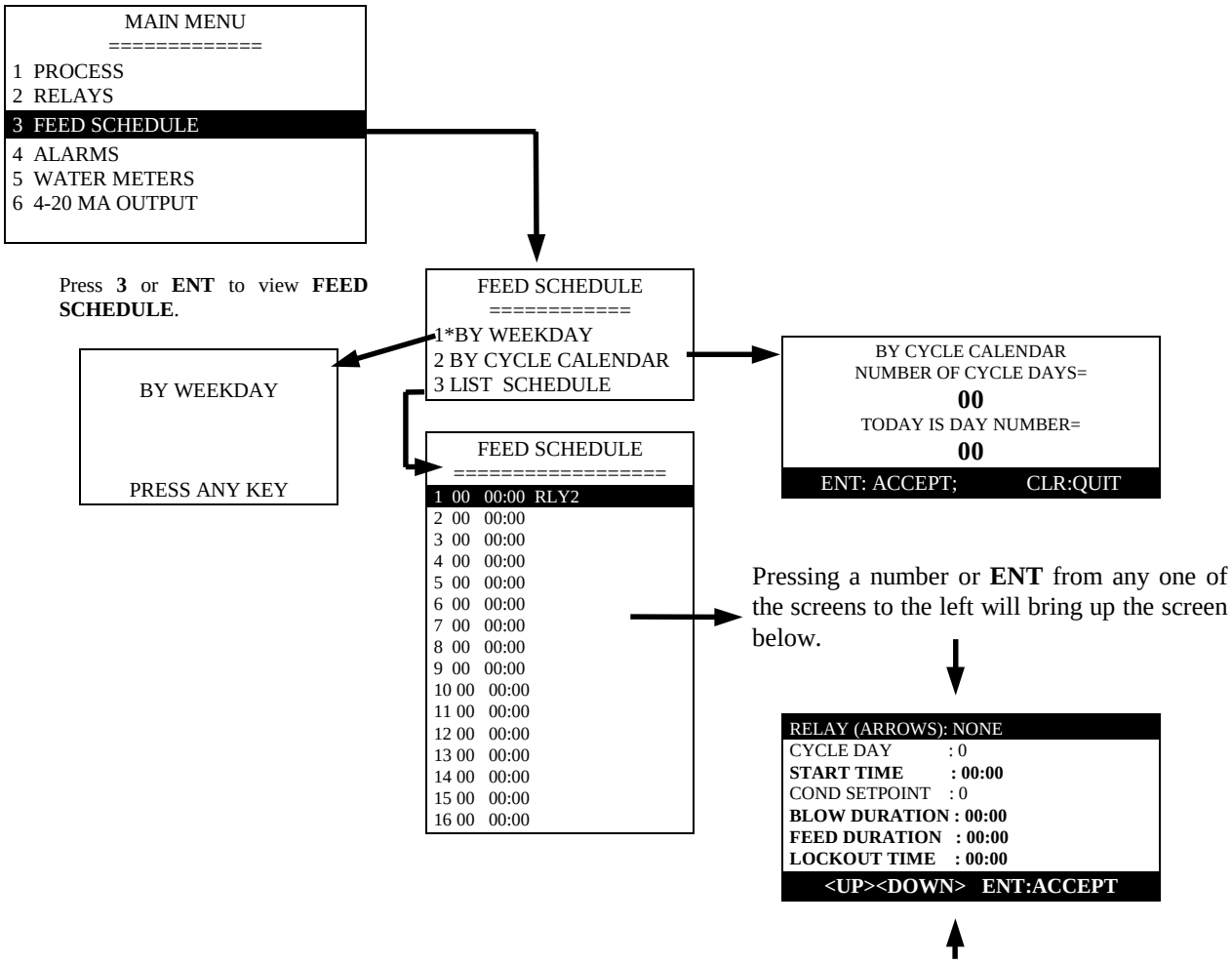
RELAYS
Rly 2, 3, 4



NOTE:
The relay will activate on any of the alarms listed below.
==========
{ALARM FLASHING}, WHITE LETTERS ON BLACK BACKGROUND
1 HIGH CONDUCTIVITY
2 LOW CONDUCTIVITY
3 NO FLOW
4 DRUM LEVEL #1
5 DRUM LEVEL #2
6 OPENED TC
7 SHORTED TC
8 BLOWDOWN TIMEOUT

*Press **CLR** to return to a previous screen. Repeated use of **CLR** allows you to return to the Main Menu from anywhere in the program.*

FEED SCHEDULE

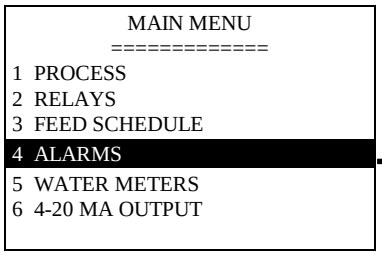


NOTE: a chemical relay must be designated before this screen is functional (see relay config).

*Press **CLR** to return to a previous screen. Repeated use of **CLR** allows you to return to the Main Menu from anywhere in the program.*

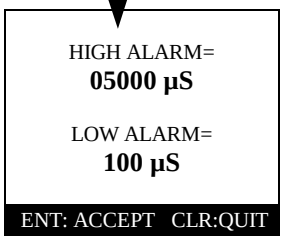
TECHNICIAN LEVEL MENU

ALARMS



Press **4** or **ENT** to view **ALARMS**.

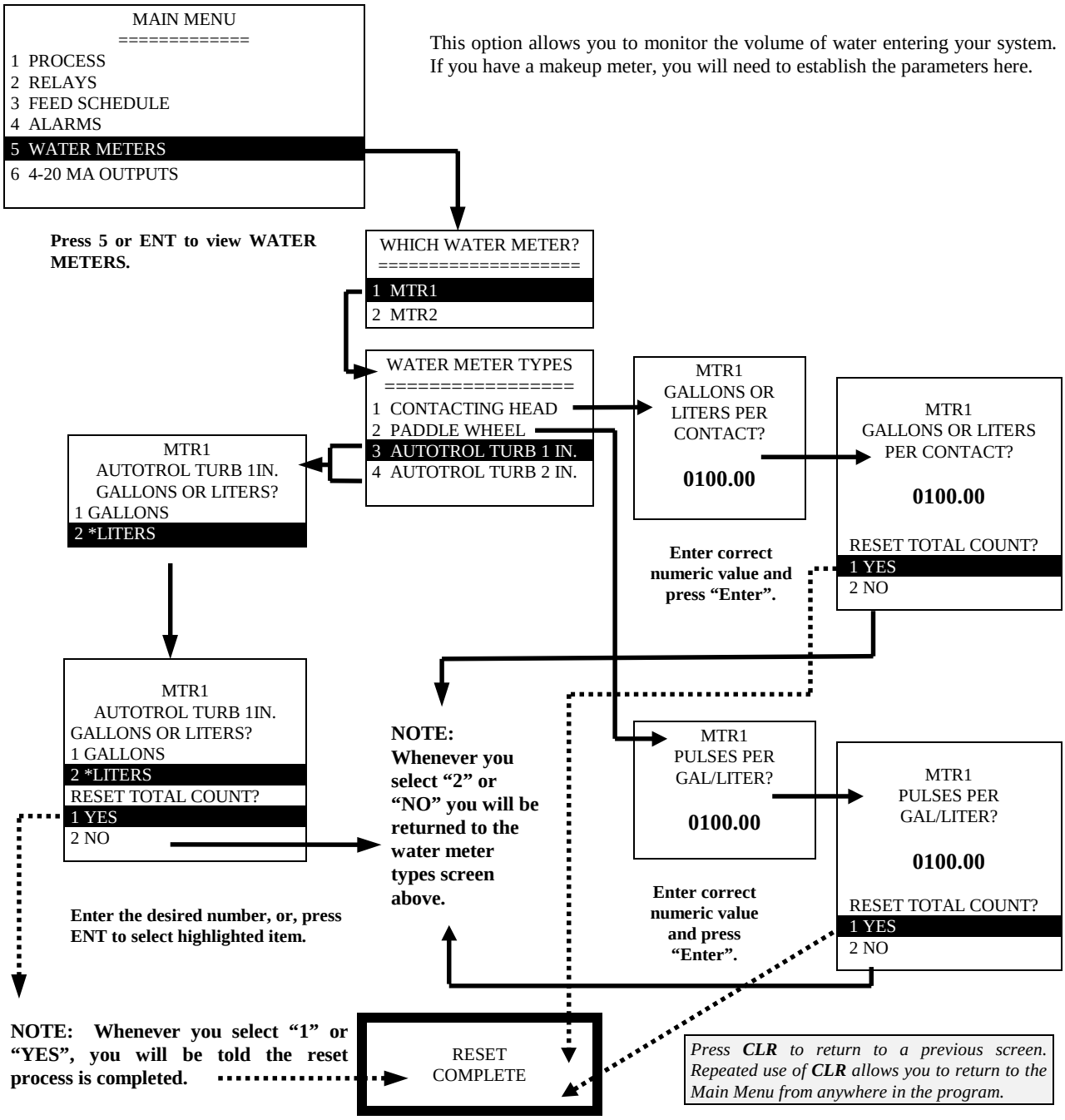
The Model 1575 is equipped with both high and low alarms. This menu option allows you to program the specific values for these alarms. Consult your water treatment specialist when determining the proper High and Low Alarm values for your system.



***NOTE*: A HIGH CONDUCTIVITY ALARM WILL OVERRIDE THE STANDARD SETPOINT AND FORCE A BLOWDOWN.**

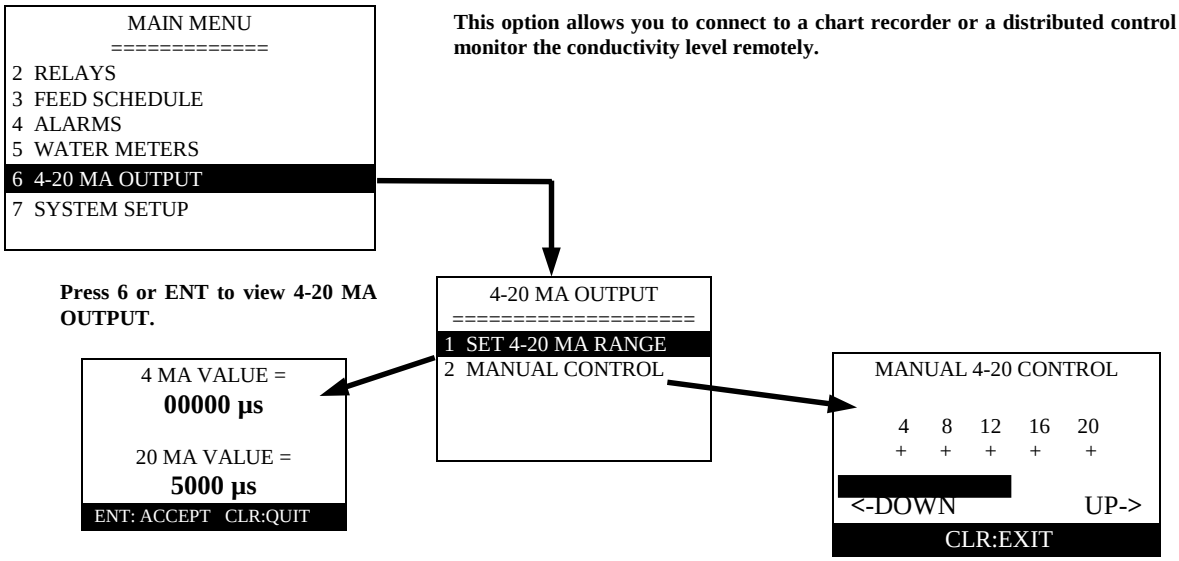
*Press **CLR** to return to a previous screen. Repeated use of **CLR** allows you to return to the Main Menu from anywhere in the program.*

WATER METERS



TECHNICIAN LEVEL MENU

4-20 MA OUTPUT



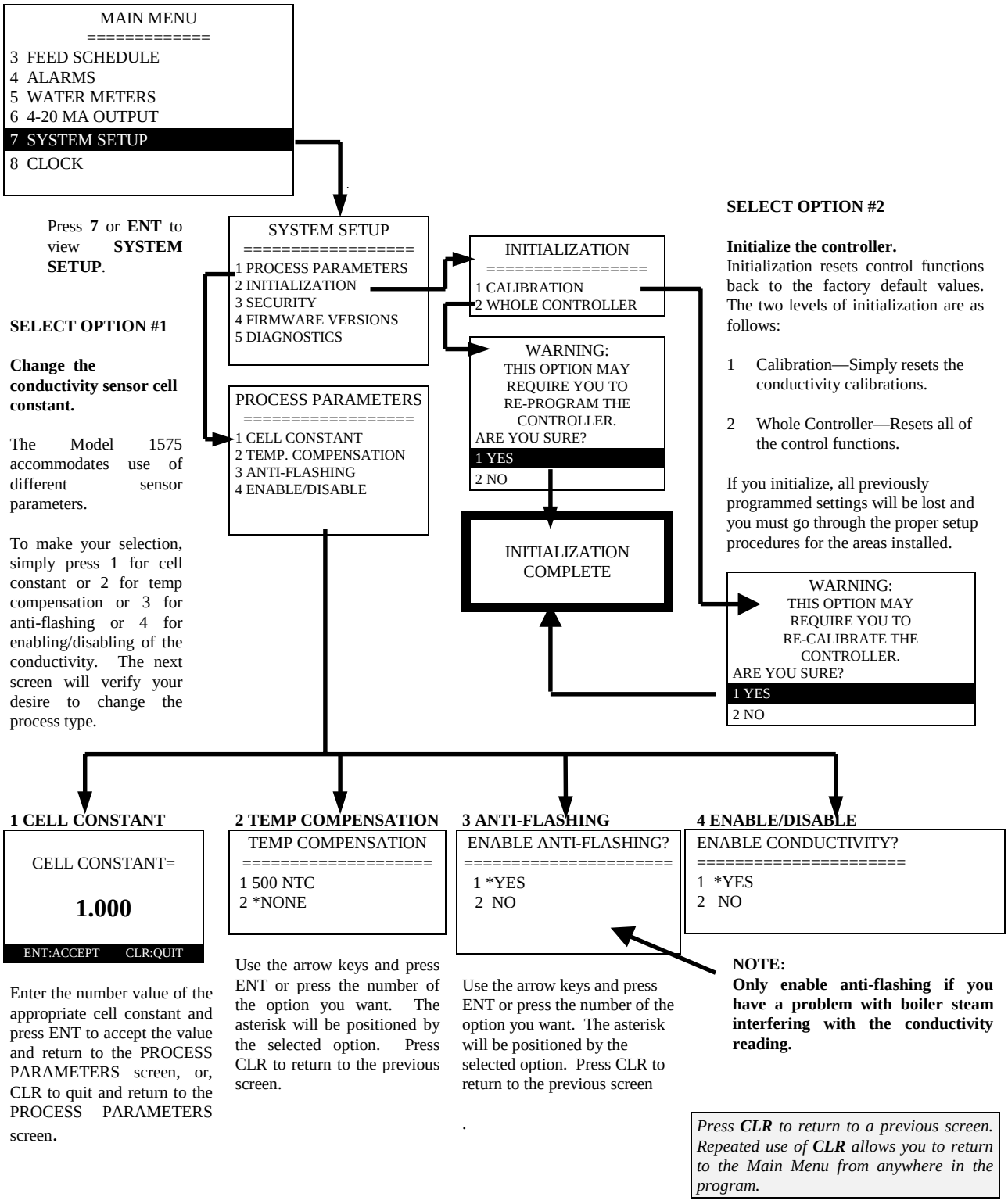
This option allows you to connect to a chart recorder or a distributed control system to monitor the conductivity level remotely.

Press 6 or ENT to view 4-20 MA OUTPUT.

Use the ↑ and ↓ keys to manually drive the output.

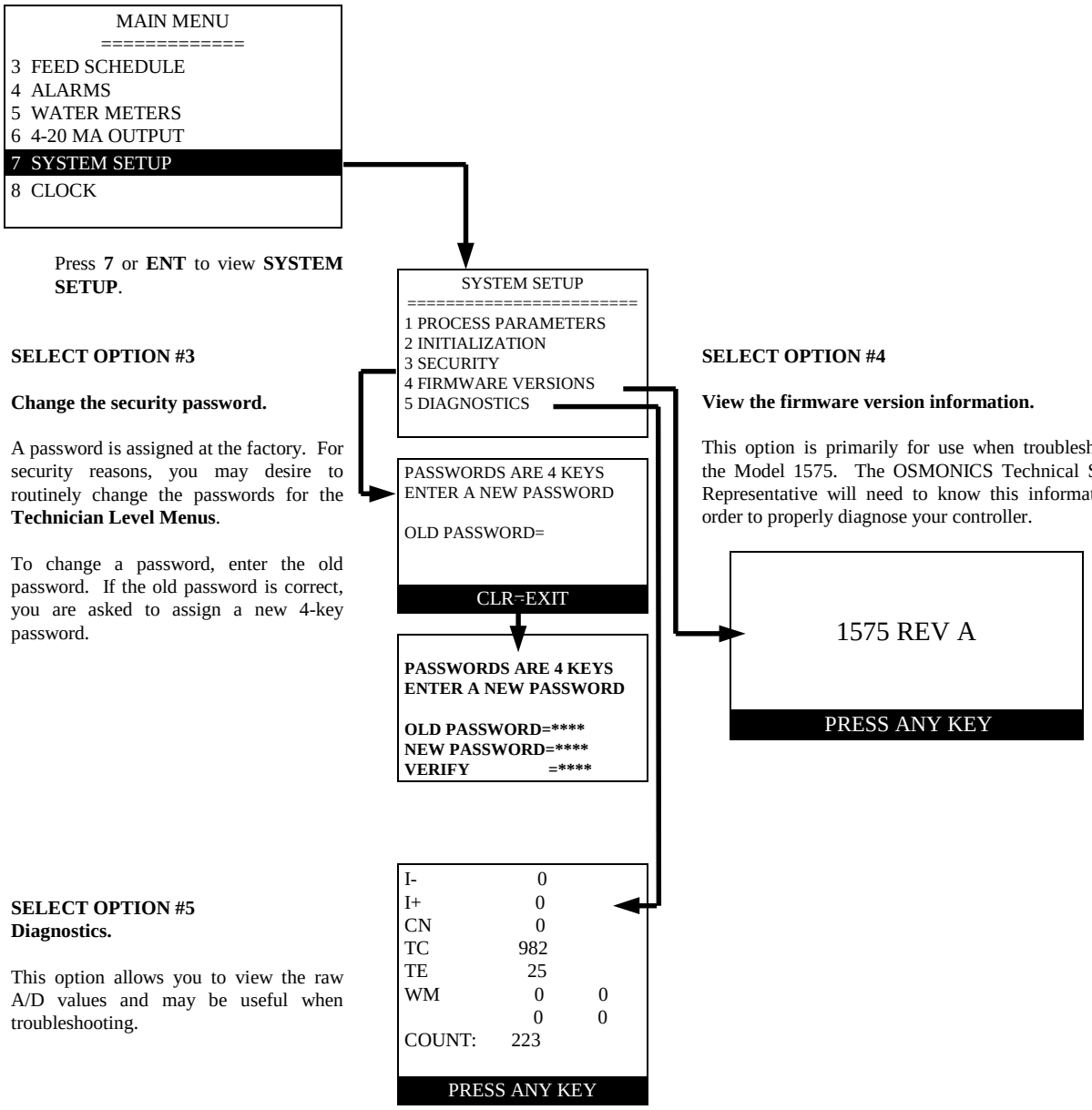
*Press **CLR** to return to a previous screen. Repeated use of **CLR** allows you to return to the Main Menu from anywhere in the program.*

SYSTEM SETUP



TECHNICIAN LEVEL MENU

SYSTEM SETUP



Press **7** or **ENT** to view **SYSTEM SETUP**.

SELECT OPTION #3

Change the security password.

A password is assigned at the factory. For security reasons, you may desire to routinely change the passwords for the **Technician Level Menus**.

To change a password, enter the old password. If the old password is correct, you are asked to assign a new 4-key password.

SELECT OPTION #4

View the firmware version information.

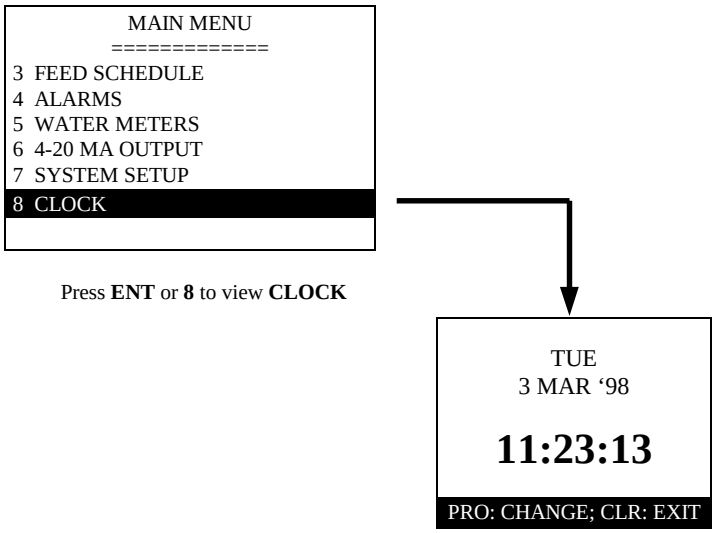
This option is primarily for use when troubleshooting the Model 1575. The OSMONICS Technical Service Representative will need to know this information in order to properly diagnose your controller.

SELECT OPTION #5
Diagnostics.

This option allows you to view the raw A/D values and may be useful when troubleshooting.

*Press **CLR** to return to a previous screen. Repeated use of **CLR** allows you to return to the Main Menu from anywhere in the program.*

CLOCK



1. Press **PRO** to change settings. Use the ↑ and ↓ keys to set the day of the week.
2. Then press **ENT** to move to the date display. Use the **keypad numbers** to set the correct calendar date.
3. Press **ENT** to accept the entered value and to move to the month setting. Use the ↑ and ↓ keys to set the month.
4. Press **ENT** to accept the entered value and move to the year setting. Use the **keypad numbers** to set the year.
5. Press **ENT** to accept the entered value and move to the hours setting. Use the **keypad numbers** to set the correct hour on a 24 hour clock.
6. Press **ENT** to accept the entered value and move to the minutes setting. Use the **keypad numbers** to set the correct minutes.
7. Press **ENT** to accept the entered value and move to the seconds setting. Use the **keypad numbers** to set the correct seconds.
8. Press **ENT** to accept all the entered values and start the clock again.

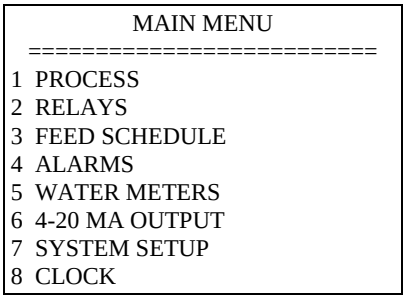
The clock will start counting time after you move through the entire selection and press ENT the last time.

Press **CLR** to return to the previous screen.

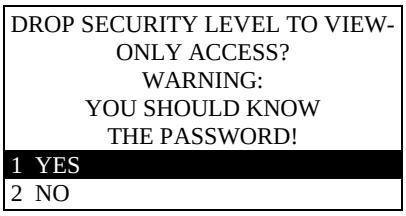
*Press **CLR** to return to a previous screen. Repeated use of **CLR** allows you to return to the Main Menu from anywhere in the program.*

CHANGING SECURITY LEVELS

In order to change the security level (i.e., from **Technician** to **View-Only**), go to the **Main Menu**.



Press **0** on the keypad. *(Note that **0** does not appear on the menu screen, only on the keypad.)*



Select **YES** to change the security level.



The controller menu now functions at the VIEW-ONLY security level.

To return to the **Technician** security level, simply press the numeric password from any VIEW-ONLY screen:

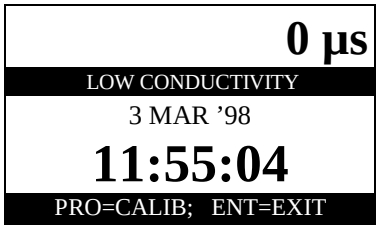


Remember that following the first power-up the Technician code is 2222. You may change the passwords in the SYSTEM SETUP menu.

VIEW ONLY LEVEL SCREENS

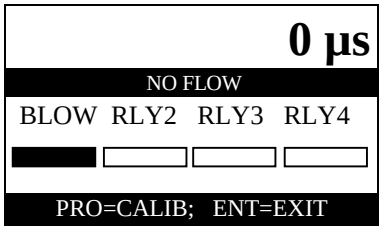
PROCESS

1 - DATE SCREEN

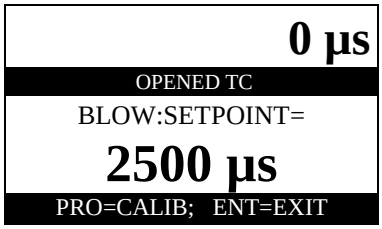


- These screens are all available by using the ↑ and ↓ keys to obtain the desired screen.
- Press **ENT** to view relay settings or to manually enable a relay for testing or troubleshooting purposes.

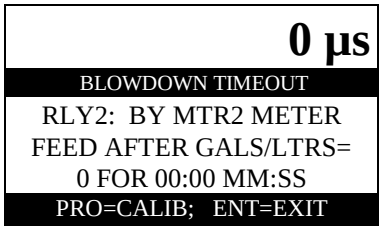
2 - ALL RELAY SCREEN



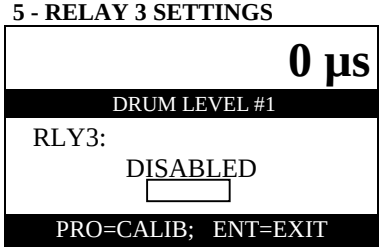
3 - BLOW SETPOINT SCREEN



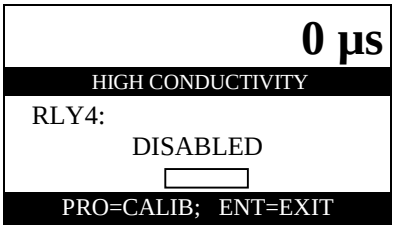
4 - RELAY 2 SETTINGS



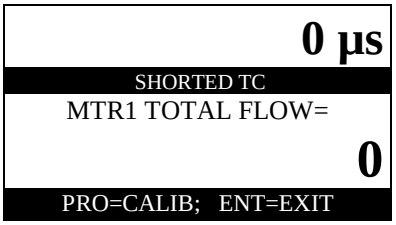
5 - RELAY 3 SETTINGS



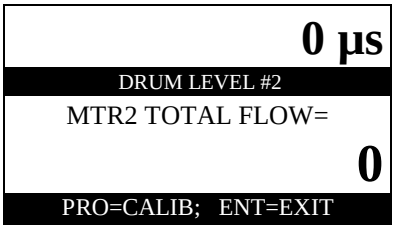
6 - RELAY 4 SETTINGS



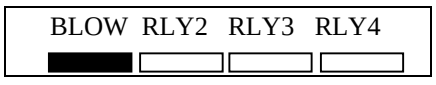
7 - MTR1 FLOW



8 - MTR2 FLOW



When conductivity is disabled the top half of the screen will look like this.



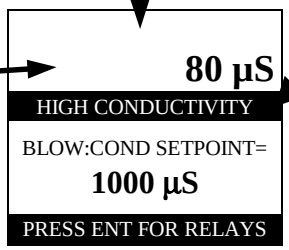
*Press **CLR** to return to a previous screen. Repeated use of **CLR** allows you to return to the Main Menu from anywhere in the program.*

VIEW ONLY LEVEL SCREENS

RELAYS

THERE IS NO MENU FOR THE VIEW ONLY LEVEL

In the **View Only Level Screen**, you can view the conductivity level, the alarms and the status lines. You can also control the four relays. Simply follow the procedure described below:



Current reading of sample water conductivity level.

This line allows you to view one of six different status lines. To select the status to view, use the ↑ and ↓ keys to move through the list. Here's what is available:

a) Date and time
b) All four relay status
c) Blowdown setpoint
d) Relay 2 Settings
e) Relay 3 Settings
f) Relay 4 Settings
g) Meter 1 Total Flow
h) Meter 2 Total Flow

The alarm status line, a darkened area, scrolls through all currently active alarms:

a) High Conductivity
b) Low Conductivity
c) No Flow
d) Drum Level #1
e) Drum Level #2
f) Opened TC
g) Shorted TC
h) Blowdown timeout

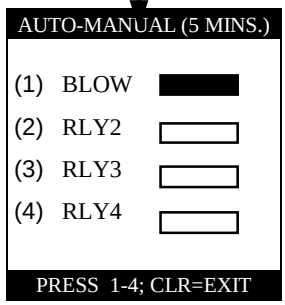
If no alarms are active, nothing will be displayed here.

NOTE: THE CONTROLLER MEASURES ONLY UN-NEUTRALIZED CONDUCTIVITY.

This screen shows you the status of the four relays. Simply press the number of the relay if you want to manually change a relay's status.

An automatic five-minute timer begins as soon as you change a relay. After five minutes pass, the relay returns to automatic control.

The timer will continue even if you exit the menu.



*Press **CLR** to return to a previous screen.*

Technical Service/Return Material Procedure

☎ **Technical Support for Lakewood Instruments can be reached by calling (800) 228-0839 or faxing (262) 238-4402, Monday through Friday, 7:30 a.m. - 4:30 p.m. CST.**

NOTE: IF YOU CALL FOR TROUBLESHOOTING HELP, PLEASE HAVE THE MODEL NUMBER, SERIAL NUMBER, AND ANY OPTIONS PERTAINING TO YOUR UNIT AVAILABLE FOR REFERENCE.

Mail and returns should be sent to:

OSMONICS
Milwaukee Operations
5730 North Glen Park Road
Milwaukee, WI 53209-4454 USA

When any merchandise is to be returned to the factory, please call and obtain a return material order (RMO) number and have the following information available:

- Customer's name, address, telephone and fax numbers (shipping and billing).
- A hard copy purchase order number (no exceptions) for cases where repairs or parts are required that are not under warranty.
- A contact person's name and telephone number to call if the equipment is beyond repair or to discuss any other warranty matter.
- Equipment model and serial numbers.
- Reason for return, e.g., repair, warranty, incorrect part, etc.

We will then fax to your attention an RMO form that must accompany the returned item.

NOTE: THE RMO NUMBER MUST BE CLEARLY WRITTEN ON THE OUTSIDE OF THE PACKAGE(S) BEING RETURNED.

ANY ITEMS SENT BACK TO THE FACTORY WITHOUT AN RMO NUMBER WILL BE REFUSED AND RETURNED TO SENDER

MAINTENANCE AND TECHNICAL SERVICE

Parts List and Service Guide

When calling OSMONICS about Lakewood Instruments devices, please have your controller's complete model number and serial number available, together with the firmware version and revision so that the Technician can better assist you.

Refer to the Ordering Information section of this manual for part numbered replacement parts.

Write your controller's complete model number, serial number, firmware version and revision here so that you will have them available if you wish to contact an OSMONICS Lakewood Instruments technician.

Model Number:

Serial Number:

Firmware Version:

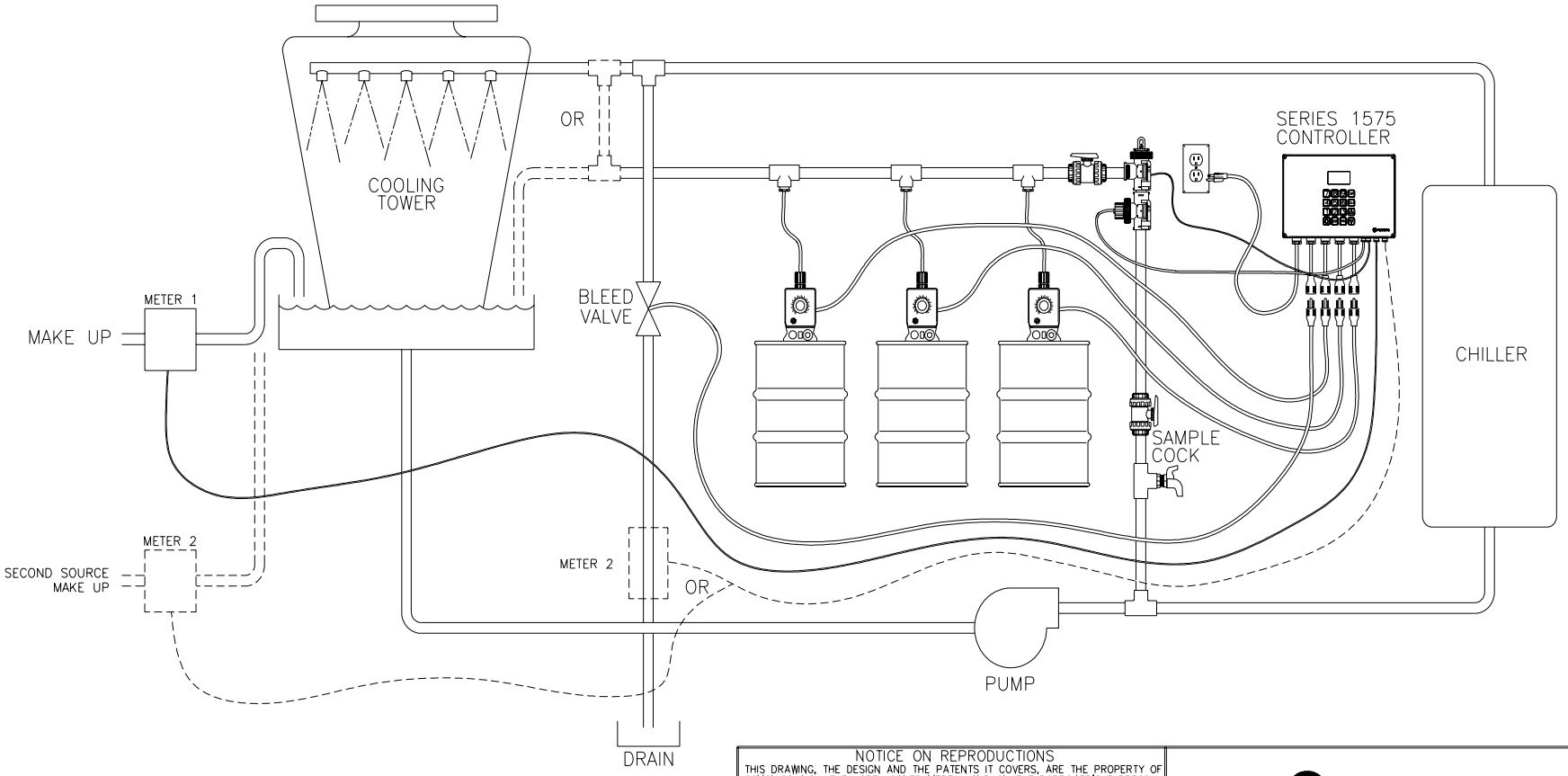
Troubleshooting

This section discusses some of the more common questions with the Model 1575. These notes are not intended to be all-inclusive—only to cover the most common situations. If you have other questions or are need support, contact the OSMONICS Technical Service Department toll free at (800) 228-0839.

PROBLEM	WHAT THIS MEANS	CORRECTIVE ACTION
{Alarm Flashing} "CONDUCTIVITY HIGH".	Conductivity is too high with respect to the high alarm setpoint. Also opens up Bleed Valve (useful during FEED SCHEDULE lockout).	1. See {BLOWDOWN TIMEOUT}. 2. Change the High Alarm Value.
{Alarm Flashing} "CONDUCTIVITY LOW".	Conductivity is too low with respect to the low alarm setpoint.	1. Check blowdown setpoint and deadband. 2. Verify blowdown valve is not stuck open. 3. Change the Low Alarm Value.
Water meters not accumulating.	There may be a problem with the wiring or the reed switch in the meter may be bad. For water meters other than the contacting head type, check the manufacturer's user manual for that particular water meter.	1. Approximately 5 volts DC should be present at the input terminal when the water meter contact is closed. That should change to zero VDC when the contact opens. Check these voltages and for correct wiring. 2. Is the controller configured for your type of water meter?
{Alarm Flashing} "FEED SEQUENCE ACTIVE".	This simply indicates that a feed schedule relay is active.	No action necessary.
Display is blank.	Open the front panel.	1. Check the fuse. Replace with 5 x 20 mm, 10A, 250V, fast blow fuse. 2. Does the unit have power? 3. If there is power to terminals AC and ACC on P1, call OSMONICS Technical Service for more information.
"NO FLOW" alarm.	Flow input switch is not closed.	1. The flow switch float may be stuck or no flow is present. 2. Flow switch may be bad. Replace reed switch in plumbing assembly. 3. If no flow switch is used, a jumper wire should be installed across the flow switch input. Removing the jumper disables all relay outputs.

PROBLEM	WHAT THIS MEANS	CORRECTIVE ACTION
{Alarm Flashing} "BLOWDOWN TIMEOUT".	This indicates that the controller has been trying to reduce the conductivity for longer than the user-programmed time and is unable to reach the setpoint.	1. Check for proper operation of the blowdown valve. Use the manual relay control to help. 2. Check that the blowdown valve is not stuck closed or restricted. 3. Check for proper makeup flow. 4. Verify blowdown timeout time is properly set for your application (see item #2 or RELAYS in MAIN menu).
{Alarm Flashing} "OPENED TC".	Temperature compensator not being properly read.	1. Check wiring. 2. Replace conductivity sensor.
{Alarm Flashing} "SHORTED TC".	Temperature compensator not being properly read.	1. Check wiring. 2. Replace conductivity sensor.
Motorized ball valve functions, but will not remain "open" or "closed" as expected.	The motorized ball valve is not indicating to the 1575 that it has actually reached the open or closed position.	Adjust the limit switch for the motorized ball valve.

REVISION HISTORY					
REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	RELEASE	0947	EV	2/19/98	JGB
B	ADDED BALL VALVES	4085	BZ	6/23/99	



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MATERIAL	TOLERANCES UNLESS NOTED FRAC DECIMALS ANGLES .X ± .1 .XX ± .03 ±1/16 .XXX ± .010 ±.5°	
FINISH		
ORDER NO.	DWN EV	DATE 2/19/98
CUSTOMER	CHKD JWZ	DATE 2/98
CUSTOMER LOC.	APVD JGB	DATE 2/25/98
DO NOT SCALE	APVD	DATE

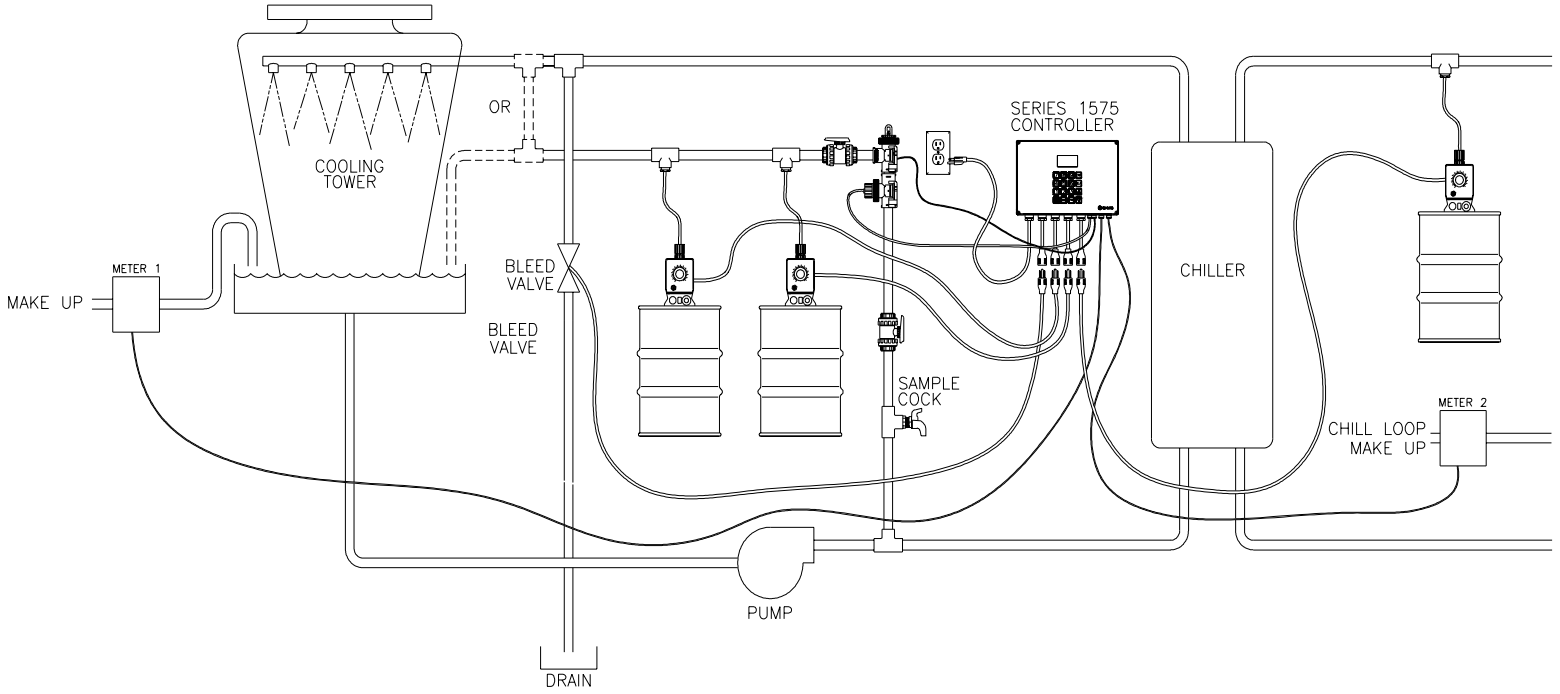
OSMONICS
PHOENIX OPERATIONS

TITLE
INSTALLATION DRAWING
COOLING TOWER, 1575 SERIES

SIZE	DWG NO/PN	REV
B (THIRD ANGLE)	1106585	B

SCALE NONE | FILE TYPE .DWG | SHEET 1 OF 1

REVISION HISTORY					
REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	RELEASE	0947	EV	2/19/98	JKB
B	ADDED VALVES	4085	BZ	6/23/99	



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MATERIAL	TOLERANCES UNLESS NOTED FRAC ±1/16 DECIMALS .X ± .1 .XX ± .03 .XXX ± .010 ANGLES ±.5°	
FINISH		
ORDER NO.	DWN EV	DATE 2/21/98
CUSTOMER	CHKD JWZ	DATE 2/98
CUSTOMER LOC.	APVD JGB	DATE 2/25/98
DO NOT SCALE	APVD	DATE

OSMONICS
PHOENIX OPERATIONS

TITLE
INSTALLATION DRAWING
CHILL LOOP/COOLING TOWER, 1575 SERIES

SIZE	DWG NO/PN	REV
B	1106586	B

THIRD ANGLE

SCALE NONE | FILE TYPE .DWG | SHEET 1 OF 1

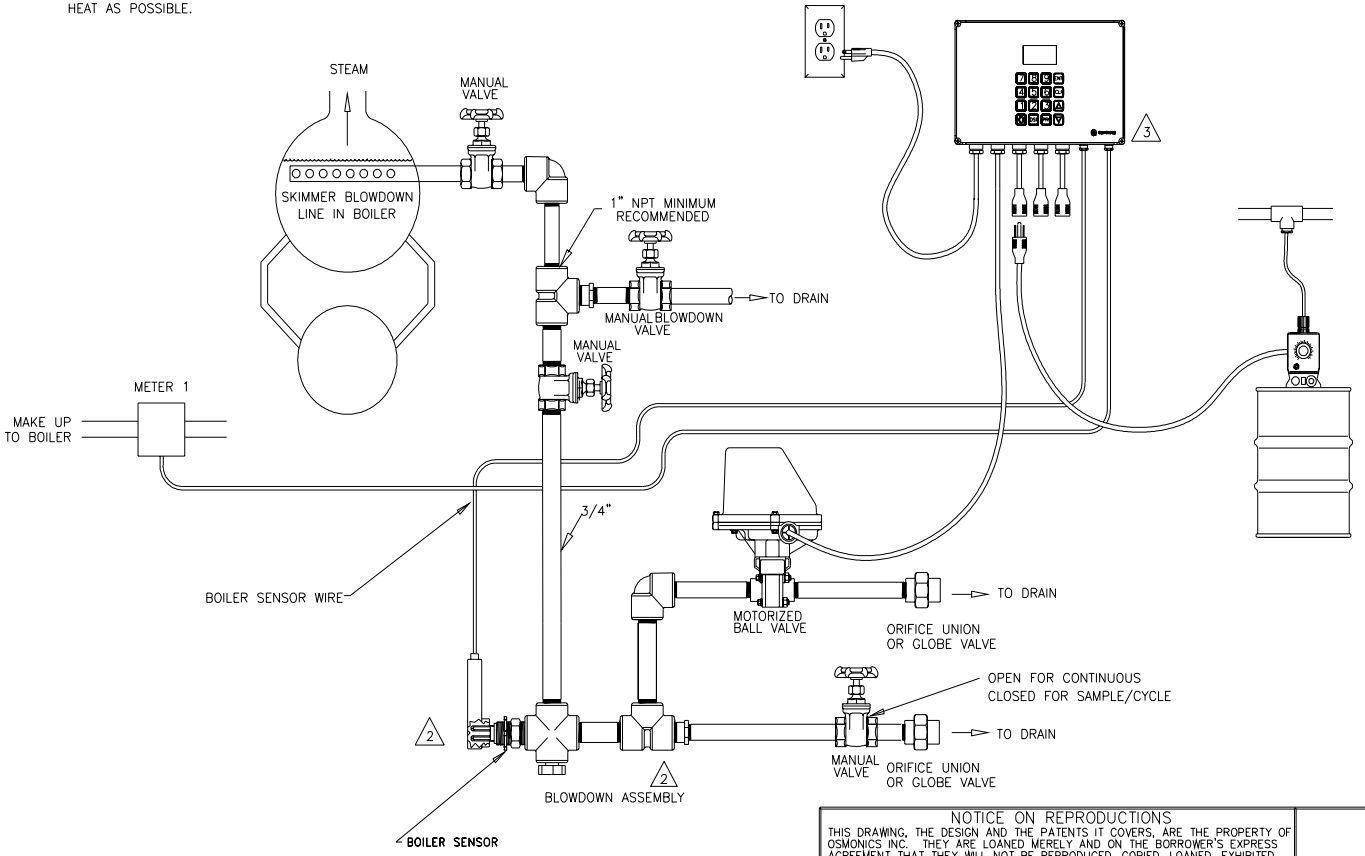
NOTES: UNLESS OTHERWISE SPECIFIED;

1. ORIFICE UNIONS MUST BE INSTALLED TO PREVENT STEAMFLASH. REFER TO USER MANUAL 1106840 FOR PROPER ORIFICE SIZING.

2. SENSOR, MOTORIZED BALL VALVE AND ORIFACE PLATE (OR GLOBE VALVE) MUST BE LOCATED BELOW THE SKIMMER IN THE POSITION SHOWN.

3. THE 1575 MUST BE LOCATED WITHIN 20 FEET OF THE BOILER SENSOR AND AS FAR FROM HEAT AS POSSIBLE.

REVISION HISTORY					
REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	RELEASE	0947	EV	2/21/98	JGB
B	CORRECTED NOTES	4085	BZ	6/24/99	



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MATERIAL	TOLERANCES UNLESS NOTED FRAC ±1/16 DECIMALS .X ± .1 .XX ± .03 .XXX ± .010 ANGLES ±.5°	
FINISH		
ORDER NO.	DWN EV	DATE 2/21/98
CUSTOMER	CHKD JWZ	DATE 2/98
CUSTOMER LOC.	APVD JGB	DATE 2/25/98
DO NOT SCALE	APVD	DATE

OSMONICS
PHOENIX OPERATIONS

TITLE
INSTALLATION LAYOUT
SAMPLE/CYCLE OR CONTINUOUS, M-1575

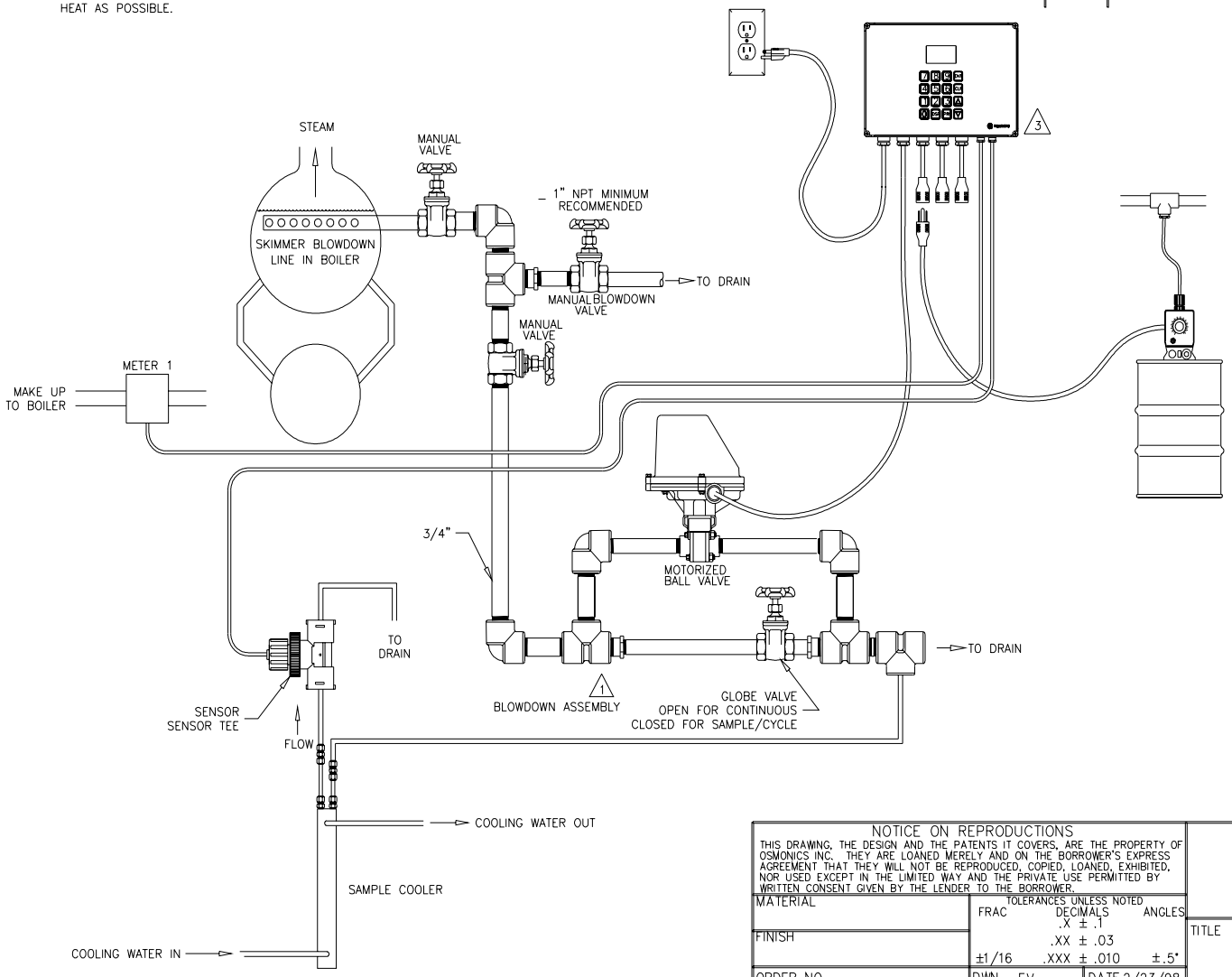
SIZE	DWG NO/PN	REV
B (THIRD ANGLE)	1106587	B

SCALE	FILE TYPE	SHEET
NONE	.DWG	1 OF 1

NOTES: UNLESS OTHERWISE SPECIFIED;

1. SENSOR, MOTORIZED BALL VALVE AND GLOBE VALVE MUST BE LOCATED BELOW THE SKIMMER IN THE POSITION SHOWN.
2. THE 1575 MUST BE LOCATED WITHIN 20 FEET OF THE BOILER SENSOR AND AS FAR FROM HEAT AS POSSIBLE.

REVISION HISTORY					
REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	RELEASE	0947	EV	2/23/98	JGB
B	CORRECTED NOTES	4085	BZ	6/24/99	



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MATERIAL	TOLERANCES UNLESS NOTED FRAC ±1/16 DECIMALS .X ± .1 .XX ± .03 .XXX ± .010 ANGLES ±.5°	
FINISH		
ORDER NO.	DWN EV	DATE 2/23/98
CUSTOMER	CHKD JWZ	DATE 2/98
CUSTOMER LOC.	APVD JGB	DATE 2/25/98
DO NOT SCALE	APVD	DATE

OSMONICS
PHOENIX OPERATIONS

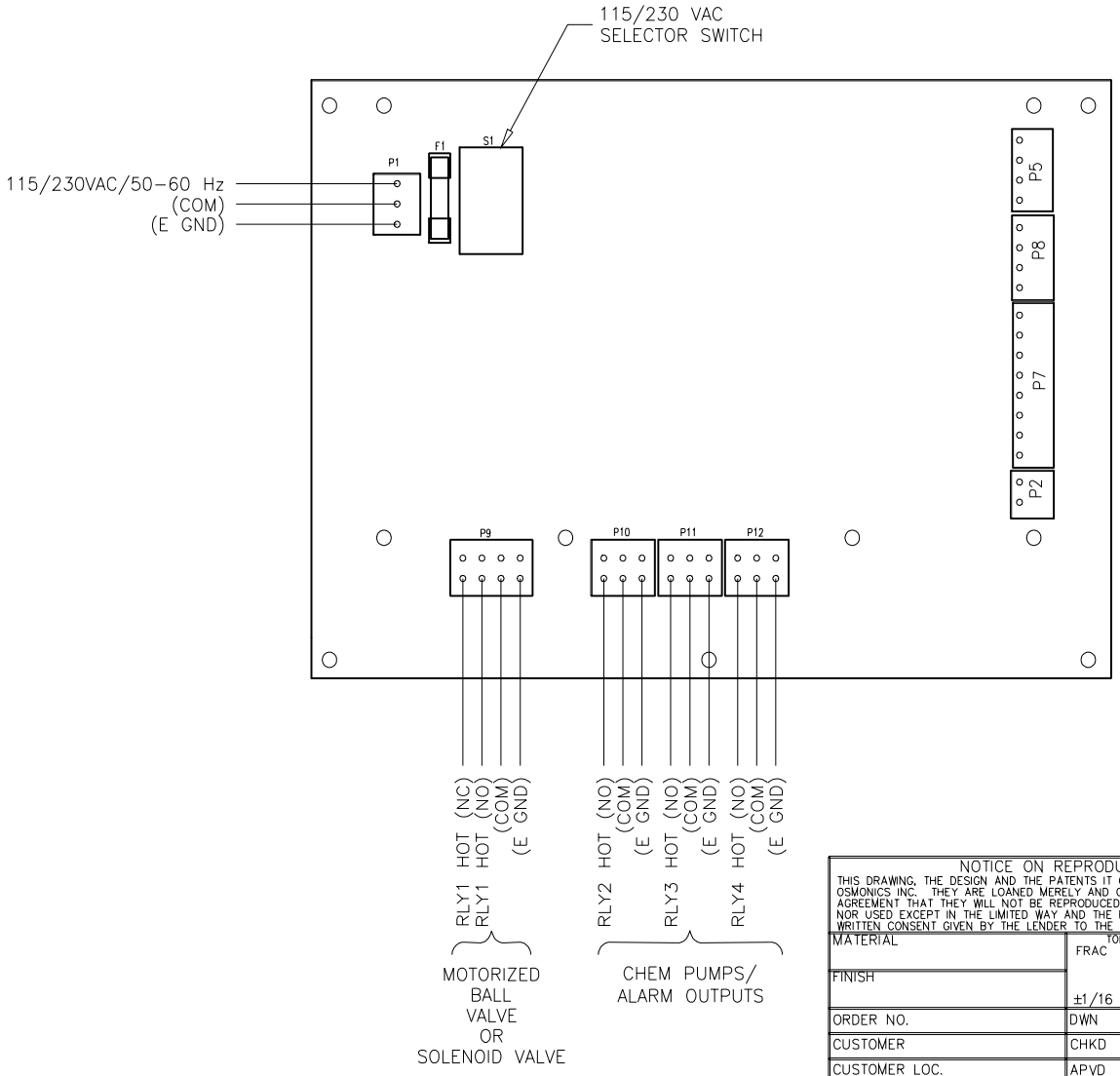
TITLE: INSTALLATION LAYOUT
BOILER W/SAMPLE LOOP, M-1575

SIZE	DWG NO/PN	REV
B	1106588	B

THIRD ANGLE

SCALE NONE | FILE TYPE .DWG | SHEET 1 OF 1

REVISION HISTORY					
REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	RELEASE	0947	EV	2/23/98	JGB
B	CORRECTED INFORMATION	4085	BZ	6/24/99	



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MATERIAL	TOLERANCES UNLESS NOTED FRAC ±1/16 DECIMALS .X ± .1, .XX ± .03, .XXX ± .010 ANGLES ±.5°	
FINISH		
ORDER NO.	DWN EV	DATE 2/23/98
CUSTOMER	CHKD JWZ	DATE 2/98
CUSTOMER LOC.	APVD JGB	DATE 2/25/98
DO NOT SCALE	APVD	DATE

OSMONICS
PHOENIX OPERATIONS

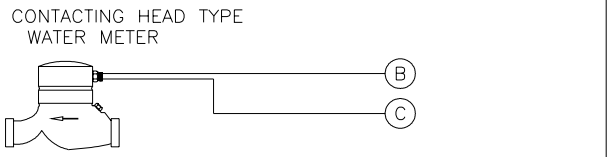
TITLE: WIRING DIAGRAM
1575 SERIES, POWER

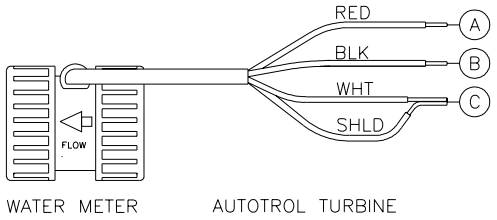
SIZE	DWG NO/PN	REV
B (THIRD ANGLE)	1106589	B
SCALE NONE	FILE TYPE .DWG	SHEET 1 OF 1

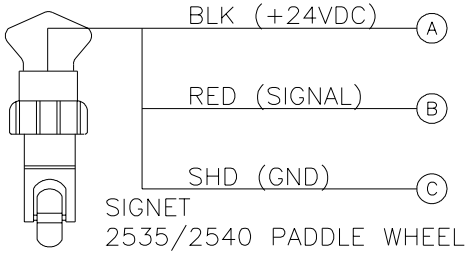
NOTES: UNLESS OTHERWISE SPECIFIED;

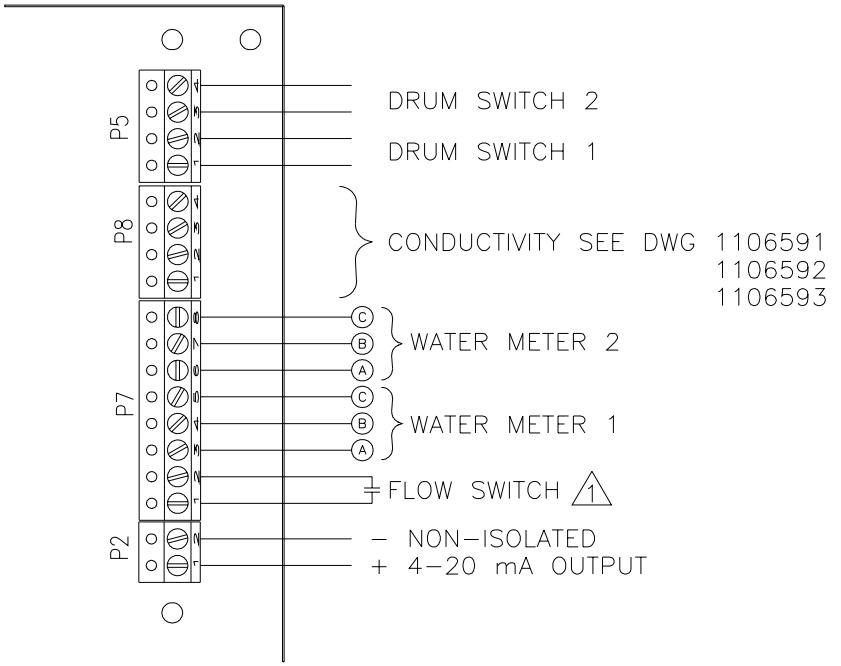
1. IF NO FLOW SWITCH IS USED, SHORT OUT PINS 1 & 2 WITH WIRE.

REVISION HISTORY						
REV	ZONE	DESCRIPTION	ECO	DWN	DATE	APVD
A		RELEASE	0947	EV	2/23/98	JGB
B		REMOVED SIGNAL BOARD	4085	BZ	6/24/99	









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MATERIAL	TOLERANCES UNLESS NOTED: FRAC ±1/16, DECIMALS .X ±.1, .XX ±.03, .XXX ±.010, ANGLES ±.5°	
FINISH		
ORDER NO.	DWN EV	DATE 2/23/98
CUSTOMER	CHKD JWZ	DATE 2/98
CUSTOMER LOC.	APVD JGB	DATE 2/25/98
DO NOT SCALE	APVD	DATE

OSMONICS
PHOENIX OPERATIONS

TITLE: WIRING DIAGRAM
WATER METER INPUTS, M–1575 SERIES

SIZE C | THIRD ANGLE | DWG NO/PN 1106590 | REV B

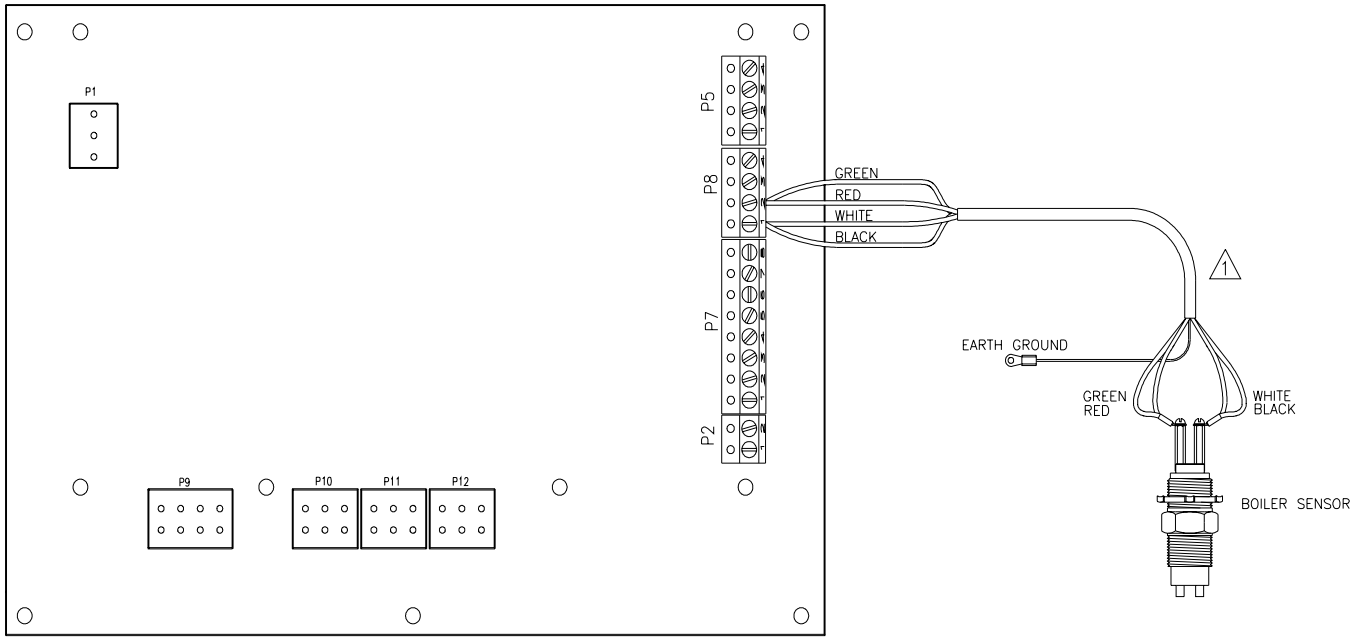
SCALE NONE | FILE TYPE .DWG | SHEET 1 OF 1

P/N 61677 REV-A PG-1/2

NOTES: UNLESS OTHERWISE SPECIFIED;

1. MAXIMUM DISTANCE FROM SENSOR TO CONTROLLER IS 20 FEET.

REVISION HISTORY					
REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	RELEASE	0947	EV	2/23/98	JGB
B	REMOVED PCB DETAIL	4085	BZ	6/25/99	



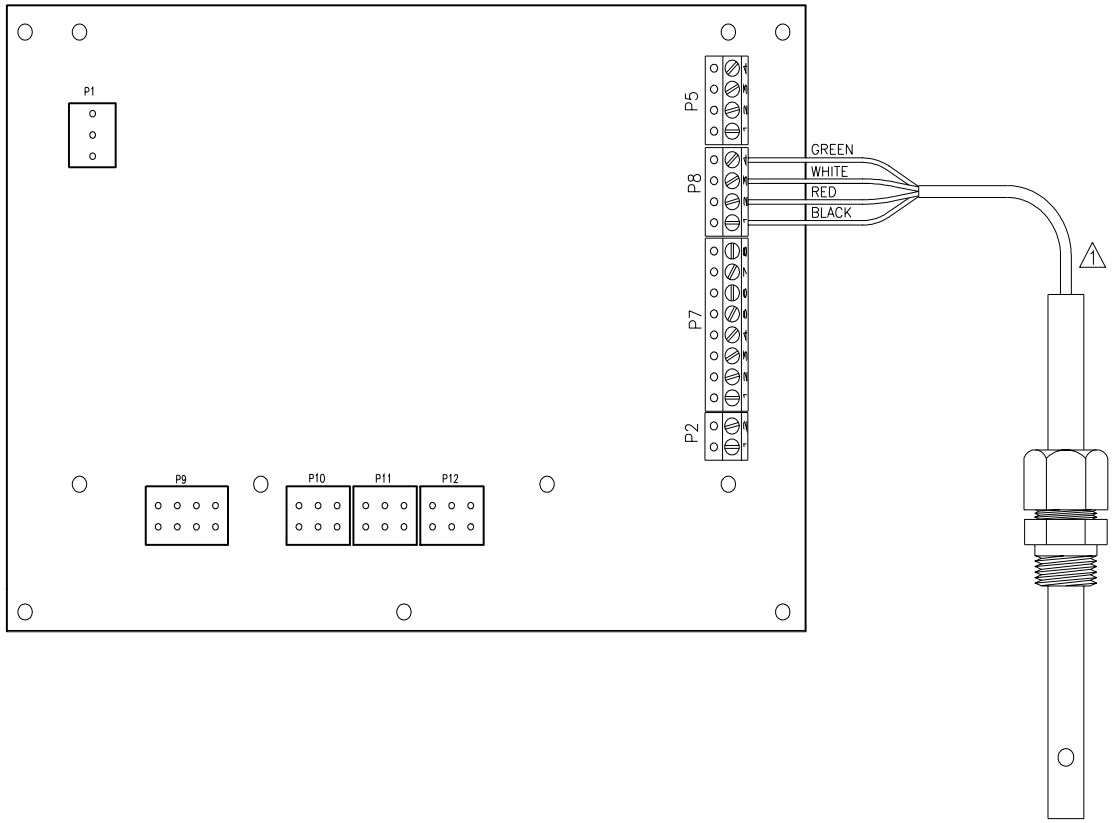
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MATERIAL	TOLERANCES UNLESS NOTED FRAC ±1/16 DECIMALS .X ± .1, .XX ± .03, .XXX ± .010 ANGLES ±.5°		OSMONICS PHOENIX OPERATIONS	
FINISH			TITLE: WIRING DIAGRAM SENSOR WIRING, BOILER, M-1575	
ORDER NO.	DWN EV	DATE 2/23/98		
CUSTOMER	CHKD JWZ	DATE 2/98	SIZE B	DWG NO/PN 1106591 REV B
CUSTOMER LOC.	APVD JGB	DATE 2/25/98	THIRD ANGLE	
DO NOT SCALE	APVD	DATE	SCALE NONE	FILE TYPE .DWG SHEET 1 OF 1

NOTES: UNLESS OTHERWISE SPECIFIED;

1. MAXIMUM DISTANCE FROM SENSOR TO CONTROLLER IS 20 FEET.

REVISION HISTORY					
REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	RELEASE	0947	EV	2/23/98	JGB
B	REMOVED PCB DETAIL	4085	BZ	6/25/99	



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MATERIAL	TOLERANCES UNLESS NOTED FRAC ±1/16 DECIMALS .X ± .1, .XX ± .03, .XXX ± .010 ANGLES ±.5°		
FINISH			
ORDER NO.	DWN EV	DATE 2/23/98	
CUSTOMER	CHKD JWZ	DATE 2/98	
CUSTOMER LOC.	APVD JGB	DATE 2/25/98	
DO NOT SCALE	APVD	DATE	

OSMONICS
PHOENIX OPERATIONS

TITLE
WIRING DIAGRAM
SENSOR WIRING, 540K.1, M-1575

SIZE	DWG NO/PN	REV
B	1106592	B

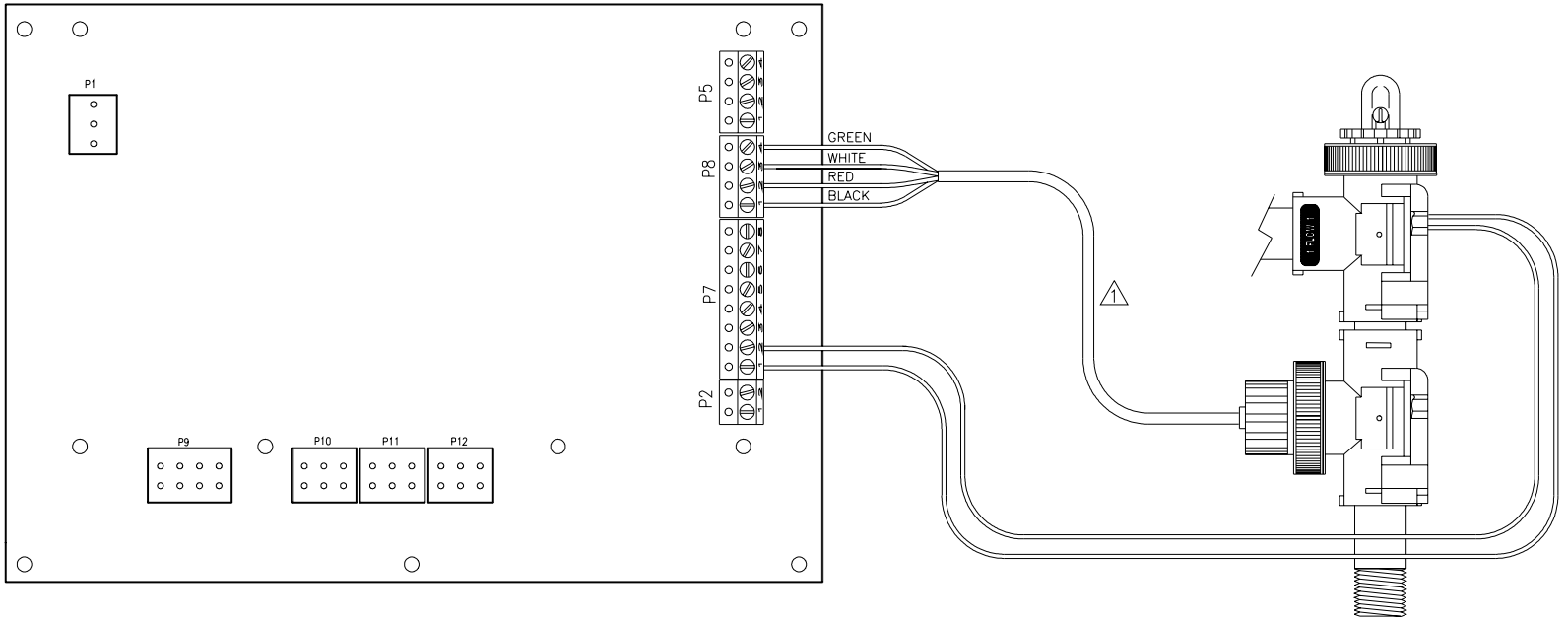
THIRD ANGLE

SCALE NONE | FILE TYPE .DWG | SHEET 1 OF 1

NOTES: UNLESS OTHERWISE SPECIFIED;

⚠1 MAXIMUM DISTANCE FROM SENSOR TO CONTROLLER IS 20 FEET.

REVISION HISTORY					
REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	RELEASE	0947	EV	2/23/98	JGB
B	ADDED FLOW SWITCH WIRING	4085	BZ	6/28/99	



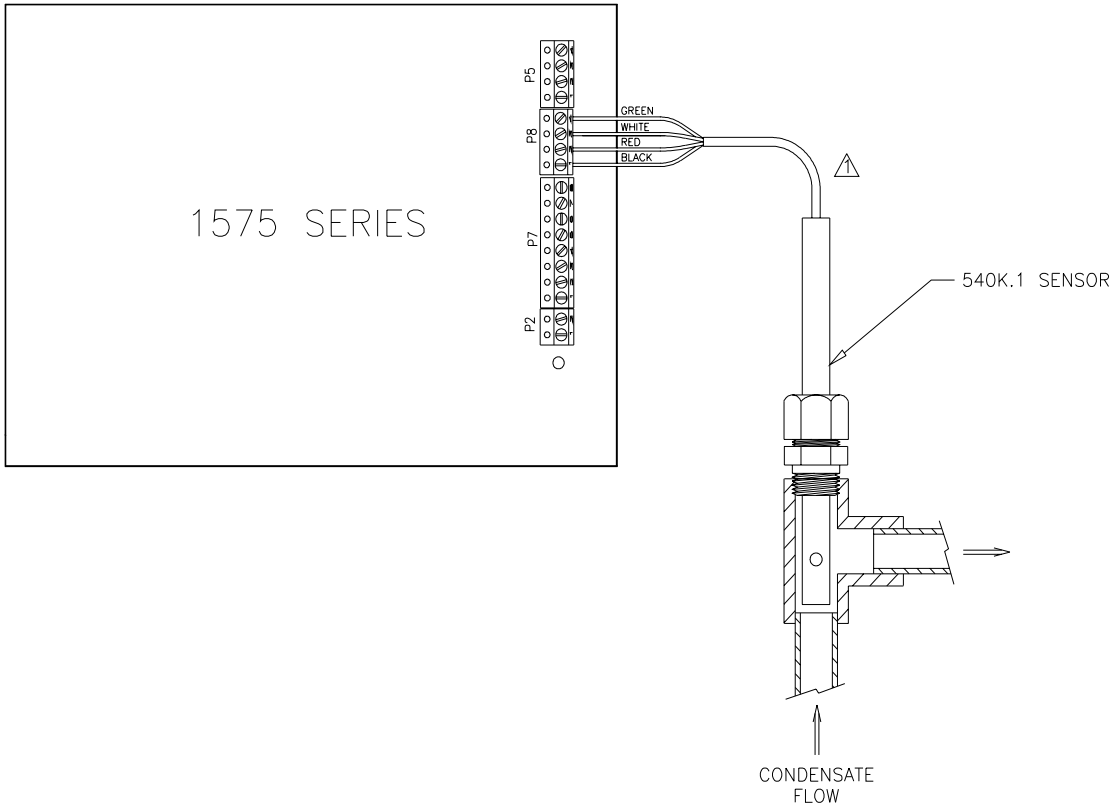
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MATERIAL	TOLERANCES UNLESS NOTED: FRAC ±1/16, DECIMALS .X ± .1, .XX ± .03, .XXX ± .010, ANGLES ±.5°		OSMONICS PHOENIX OPERATIONS	
FINISH			TITLE: WIRING DIAGRAM COOLING TOWER SENSOR, M-1575 SERIES	
ORDER NO.	DWN EV	DATE 2/23/98		
CUSTOMER	CHKD JWZ	DATE 2/98	SIZE B	DWG NO/PN 1106593
CUSTOMER LOC.	APVD JGB	DATE 2/25/98	THIRD ANGLE	REV B
DO NOT SCALE	APVD	DATE	SCALE NONE	FILE TYPE .DWG
				SHEET 1 OF 1

NOTES: UNLESS OTHERWISE SPECIFIED;

⚠ MAXIMUM DISTANCE FROM SENSOR TO CONTROLLER IS 20 FEET.

REVISION HISTORY					
REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	RELEASE	0947	EV	2/23/98	JGB
B	CORRECTED TEXT	4085	BZ	6/28/99	



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MATERIAL	TOLERANCES UNLESS NOTED FRAC DECIMALS ANGLES .X ± .1	
FINISH	.XX ± .03 ±1/16 .XXX ± .010 ±.5°	
ORDER NO.	DWN EV	DATE 2/23/98
CUSTOMER	CHKD JWZ	DATE 2/98
CUSTOMER LOC.	APVD JGB	DATE 2/25/98
DO NOT SCALE	APVD	DATE

OSMONICS
PHOENIX OPERATIONS

TITLE: INSTALLATION DRAWING
CONDENSATE INSTALLATION

SIZE	DWG NO/PN	REV
B (THIRD ANGLE)	1106594	B

SCALE	FILE TYPE	SHEET
NONE	.DWG	1 OF 1

For more information call toll free in the USA (800) 228-0839

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OSMONICS

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